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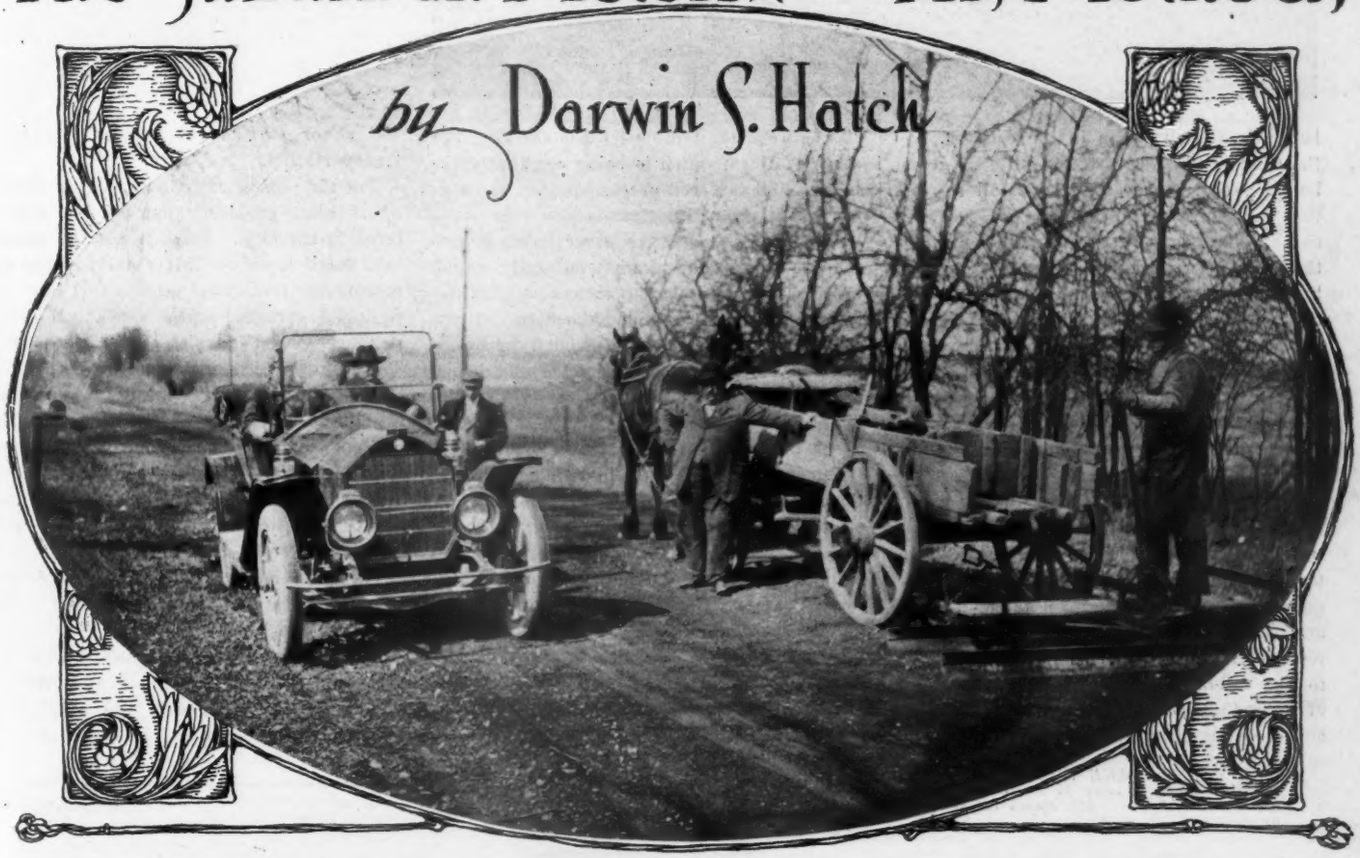
MOTOR AGE

The Suburban Motorist and His Methods

by Darwin S. Hatch



Car Owners in the Country and Suburban Towns Are the Real Enthusiasts—They Tour More Than Do Their City Cousins, They Work Harder for the Good Roads Cause and They Enjoy Many Advantages Over the Urban Motorists—Some Styles in Garages

TIME was, not so many years ago, when the chief concern of the out-of-town dweller, so far as motor cars were concerned, was to catch sight of them in time to get out and hold old Dobbin while his city cousins buzzed by in a cloud of dust. Now he is, if anything, a more ardent motorist than his urban friends. That he is a more enthusiastic tourist is evidenced by the floods of inquiries that are poured in to every source of touring information, and by the readiness with which he suggests routes and lays out tours for others. In fact, the out-of-town motorist is the man who first really made country touring popular. Probably the first amateur tourist to make a transcontinental trip was a suburbanite, Jacob Murdoch, of Johnstown, Pa., who several years ago made a motor trip from Los Angeles to New York city with his whole family.

The fact that the suburbanite is the more ardent tourist is due to two conditions. One of these is that living in the country, as he does, his appreciation of country scenes and love of natural beauty have had an opportunity to become more highly developed than those of his city cousin. His trips must of necessity be over country roads; if he is one of that great army of suburbanites whose business interests are in the metropolis, his trips to and from work are over both city boulevards and country roads. If his office is in his home town, it is usually within walking distance and his car is used solely for pleasure trips about the country with his family. The city motorist, on the other hand, employs his car for transportation to and from his office with perhaps an occasional trip through the city boulevards and parks in the evening.

Another reason for the suburbanite's love of touring is that he is usually a better driver than the average city man because, of necessity, he must take more personal care of his car. Facilities for repairing and caring for motor cars are, of course, much

COMBINATION GARAGE AND STABLE

Alfred Edward's garage in Elgin, Ill., constructed of cement with red rough-cast finish and white woodwork. Three sliding doors open up almost the whole of one side. As many as five cars may be accommodated at one time. Box stall in one corner for owner's riding horse. Cement floor with drain. Underground fuel tank holds 120 gallons of gasoline. A cement drive from the street passes to the garage through a portico which extends from the side of the residence.

better in the city than in the country, and the smaller towns and the suburbanite must be prepared to remedy the small defects that are always incidental to the use of a car. This personal care on the part of the country motorist inevitably leads to a better understanding of the capabilities of the machine and his thorough knowledge of the country roads equips him perfectly for motor touring.

It is a debatable question as to whether the spread of the good roads movement is due to the growing interest in country touring or whether the converse is true, that the increase of the number of roads fit for motor travel has resulted in the growth of the touring fever. Be that as it may, the development of touring and the growth of the good roads idea have gone hand in hand and the country motorist is the one who is responsible for both. That credit is due to the out-of-town motorist for the miles of roads that are constantly being improved, needs no argument. Witness, for instance, the network of improved roads covering the state of Iowa, which is being constantly extended and bettered every month.

City Man Poor Booster

The city man, on the other hand, is not the good roads booster that naturally would be expected. While he always is glad to learn of road improvement, he does not get out into the country often enough for it to make a personal appeal to him, and he is usually too self-centered and taken up with his every day interests to push a movement of no immediate value to him.

One noticeable feature in connection with the motor car in the country is its bearing on the back-to-the-farm movement. In its capacity as a diminisher of distance, the motor car has made it possible for the city worker to have his home in the country and pursue his daily vocation in town, running in every morning and back in the evening. Many who have been deterred from the possession of a suburban home by the discomforts of commuting have taken advantage of the motor car as the regular method of transportation.

But the possession of a car in the country offers some problems that are not encountered in the city. There is not the demand in a small town for motor car supplies and equipment that has called for the well equipped garages, repair shops and supply stations such as are found in the cities. The out-of-town motorist in many cases must be prepared to carry some of the necessary supplies for his car in stock in his private garage at all times. Just what these supplies include is dependent to a great extent upon his location. If he is near a large city or town, in which there is a good public garage the stock of supplies and parts to be kept on hand need be but little more comprehensive than that of his urban cousin.

Ways of the Wealthy

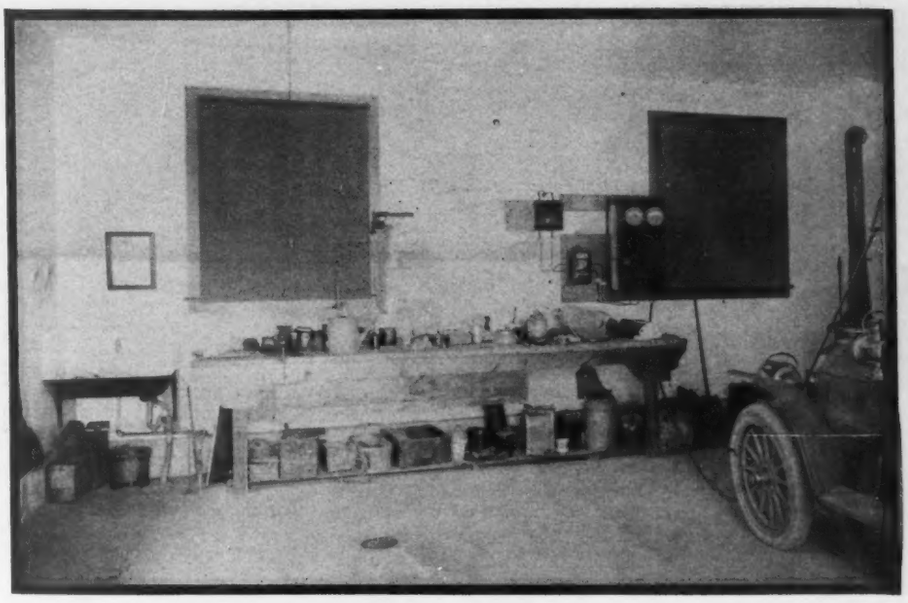
Many of the wealthier residents of the country who are frequent visitors in the city buy their motor cars and supplies of city dealers just as naturally as they go

GARAGE FOR TWO CARS

Another Elgin garage at home of Henry Bosworth which is equipped with metal oil tank and underground storage tank

FRAME GARAGE

Yellow frame building trimmed in white with green roof to match residence. Garage is 26 by 30 feet in size. Double folding doors given entrance from cement drive which passes carriage entrance of residence at the front



INTERIOR OF RETAN GARAGE FOR TWO CARS

In the foreground is seen the drain in the cement floor. The sink at the left is provided with a hose connection for washing the cars. The switchboard for charging the storage batteries of the electric vehicle is on the wall near the window at the right. The walls are finished in white plaster to absorb as little light as possible. The building is heated by the stove seen in the right-hand corner of the illustration, which serves its purpose well

there for their clothes and jewelry. They are inclined to consider the country garage, like the country tailor, as inferior to the city article. Their home garages usually are equipped to take almost the entire care of the cars and when repairs too serious or extensive for their own chauffeurs to attempt become necessary, the cars are usually entrusted to the city repairman.

Among such garages are found the best examples of complete equipment and correct arrangement for the work that is to be done. In many of these will be seen the conveniences for almost entire care of the cars. Some will have oil tanks with pumping arrangements, buried gasoline storage tanks with elaborate systems for forcing the fuel from the underground tanks, turntables, repair pits, overhead washing arrangements, work benches equipped with vises and a full complement of tools, tire vulcanizing outfits, not to mention spare tires and other repair parts. Quite often an electric vehicle is owned in addition to the gasoline cars, and the garage then is equipped with a switchboard for recharging the storage batteries of the car as well as the accumulators used for ignition in the gasoline vehicle. In comparatively rare cases a complete charging outfit is seen, in which the current supply is furnished by a small generator driven by a stationary gasoline engine.

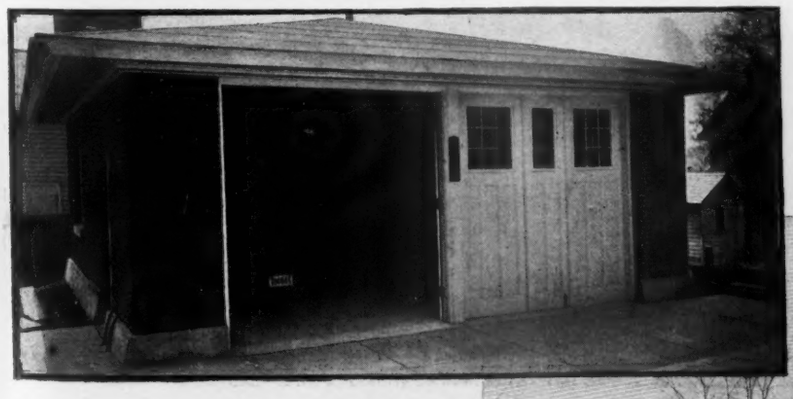
Stocking with Supplies

The majority of suburban motorists, however, do not attempt or need such elaborate installations for housing the car, for they take advantage of the local repair shops and supply houses, which nearly always are within short driving distance. These local dealers can in most cases fill the everyday needs of the country owner, but their stocks often are limited and the motorist generally finds it necessary to keep some spare parts on hand. One thing that is almost always kept in quantities in the out-of-town garage is a supply of gasoline and oil. The oil usually is obtained in barrel lots and is stored in the barrels or is transferred to a metal tank, from which it can be pumped as may be required.

Gasoline usually is kept in steel tanks buried either under the building or outside. From the tank it is pumped either into the garage by hand or forced in by air pressure. The tanks are replenished from the refiner's wagon, which makes periodical trips through the country. As the fuel is transferred directly from the wagon to the underground storage tank, there is practically no handling and therefore very little is lost. A more important consideration is the fact that the motorist, by buying in quantities directly of the producer, gets wholesale prices, and thus cuts out the middleman's profits.

Heating the Country Garage

As a general rule, the heating arrangements in country garages do not compare favorably with those to be found in buildings of the same class in the city. While steam or hot water heat is found in the homes of the majority of country motorists,



SIMPLE GARAGE MATCHES LARGE HOUSE

At the home of Allen Retan, of Elgin, the garage is constructed of rough red brick with white woodwork and green tile roof to harmonize with the design of the residence

RETAN GARAGE AT ELGIN

Double folding doors from cement drive and turning platform. Two cars, an electric vehicle and a large gasoline-driven touring car, are housed. The cement floor is provided with a drain to dispose of waste water and oil

FRAME GARAGE FOR TWO CARS

There is an increasing tendency toward providing a separate door for each car that is to be kept in the garage. This does away with a vast amount of backing and switching. Two sets of doors are provided for the cars of J. F. Fletcher, of Elgin, Ill. The tool room and repair room is separate and is entered through the door at the left of the building

it is the exception to find modern methods of heating in the garage, except in the more pretentious ones, where a separate system is maintained for the garage. The garage often could be connected with the heating system which supplies the house at a very slight expense, but the distance between residence and garage is often much greater in the country than in town and a greater length of piping would be required, necessitating a greater outlay for installation and a greater consumption of fuel as well. Quite frequently no attempt at heating the garage is made, while in other cases the owner has contented himself with the ordinary coal or wood stove.

Simple Ventilating System

While a stove in the building fulfills admirably its object as a heating appliance, yet an open flame of any kind is notoriously dangerous where gasoline may be present, and many a motorist has had occasion to mourn the loss of an expensive car through his shortsightedness in trying to heat the garage by means of a stove. One country motorist has installed a simple ventilating system which mitigates the danger connected with stove heat and which might be more generally adopted where this method of heating must be used. Sewer pipes connected with the outside air were imbedded in the cement floor in such a way that the heavy vapor of the gasoline would be carried out through them. The arrangement would be improved if the pipes passed horizontally through the walls at floor level. This would tend to prevent the accumulation of dirt and other waste matter that might stop up the pipes and thus render the system of ventilation ineffective.

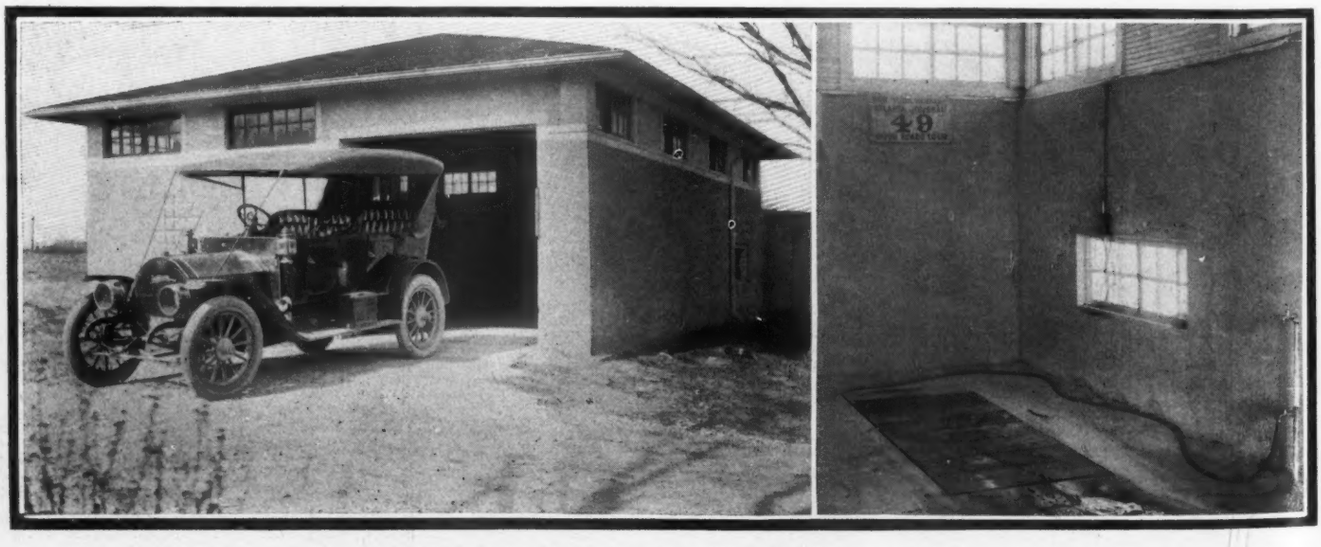
So far as the lighting facilities are concerned, the country motorist seems to be almost as well fixed as his city cousin, for the large percentage of the out-of-town people who are the possessors of cars are supplied with electric light from some city station or from a nearby trolley line. The country motorist is fortunate also in an abundance of daylight, and this has been utilized to the fullest extent in most cases, as shown by the large number of windows in the buildings. One of the illustrations shows how a long window was cut just a few feet from the floor to admit daylight to the under part of the car when working in the repair pit.

Chances for the Architects

In planning his garage the suburban motorist has a better chance to obtain novel and beautiful effects from an architectural or scenic point of view than is vouchsafed the city dweller. Land values are not so high as in the city and the suburbanite has generally more ground at his disposal on which to erect a building for housing his motor cars. His neighbors are not so close and he need not take such pains to make the architectural design harmonize with that of the buildings.

Nevertheless, while not so important in the smaller towns as in the city, this is a point which cannot be entirely ignored. Admittedly, every one has a perfect right to erect any kind of a building on his own property he may choose, but no man who is a good citizen will build a structure which is unworthy of the community in which he lives. Just as truly as when he puts up a residence, the builder of a garage owes a duty not only to himself and his family but to the community as well.

In the garages described and illustrated the attempt has been made to bring out some of the various ways in which the structures have been designed to combine utility with architectural appropriateness. Very little attention has been paid to the question of cost for several reasons. A building of any sort can very readily be made an eyesore by its utter incongruity, no matter how many thousands of dollars have been expended upon it; while a less pretentious and expensive structure may add to, rather than detract from, the beauty of the place



SUBURBAN GARAGE THAT HAS SEVERAL GOOD FEATURES

The garage of N. H. Van Sicklen, Sr., near St. Charles, Ill., is of gray cement construction 24 by 36 feet in size. The windows are arranged to give the maximum of daylight without excess sunlight. Wide, low windows extend around the major portion of the four sides of the building high up under the eaves. The interior view shows the repair pit with a special window near the floor to throw the light on the under parts of the car. The repair pit has a special drain

HOUSES MOTOR CARS, CHAUFFEUR AND COWS

This garage is on a hill so that in front the first floor or car room is level with the ground, while at the rear the floor below or basement is at the ground level. This basement is used as a barn for horses and cows. The half-story above the main floor provides chauffeur's quarters

from an architectural standpoint, and fulfill its object as a place for the housing and care of motor cars in a much better way.

The beauties of the Fox river valley have attracted many of Chicago's business men to make their homes along the banks of the river and there is quite a colony of Chicago men who make daily trips in motor cars from their homes to the city. One of these is N. H. Van Sicklen, Sr., whose garage at his residence near St. Charles is particularly well arranged for the service of the three cars maintained for his daily city trips. The building is of gray cement inside and outside and finished in white and black woodwork, with a black roof. It is 24 by 36 feet in size and has a cement floor pitched toward a drain in the center.

Lighting the Garage

The lighting arrangements are particularly good; low, wide windows placed high up under the overhanging roof extend almost three-quarters of the way around the walls. An unusually large amount of daylight is thus afforded, while the eaves prevent an excess of direct sunlight. A repair pit, 8 by 4 by 4 feet in size, near one wall is lighted by a very wide window cut in the wall near the floor, as shown in one of the illustrations. The repair pit has another feature worthy of note and that is the drain in the bottom of it to dispose of the waste water and oil that is usually allowed to collect in the pit. The other equipment consists of workbench, tool rack, metal oil tank, and an underground gasoline storage tank. Artificial illumination is furnished by electric light, while a stove supplies the heat.

Examples of Country Architecture

In the garage recently erected by Alfred Edwards of Elgin, Ill., arrangements are made for housing from three to five cars and space is also provided for a box stall for a riding horse. The building is one story in height and is 22 by 36 feet in size. The exterior is of red rough-cast cement with a green shingle roof. The cement floor is provided with a drain for carrying off the waste water and oil, while a pump brings the gasoline from a 120-gallon tank buried in the ground outside the building. One whole side of the garage is opened up by three sliding doors which allow three cars to enter and leave without any of the backing around that takes so much time where several cars are kept in the same building. The garage is reached by a cement drive from the street, the drive passing through a portico which extends from the side of the house.

The garage of Henry Bosworth, across the street from the one just described, is a yellow frame building with white trimmings to match the residence, which is of buff brick. The garage is about 26 by 30 feet in size and has a cement floor. A metal oil tank and an underground fuel tank with pump furnishes part of the equipment. Electricity is used for lighting, but the only heating facilities consist of a coal stove. The building was designed to house two cars and double folding doors give entrance from the cement drive, which passes by the carriage entrance to the residence.

The Hornbeek Garage

On the famous Elgin road race course is the home of D. B. Hornbeek, one of the most enthusiastic motorists in the state. The exterior of the garage at this place is very unassuming, but some of the internal arrangements are worthy of mention. Two cars are housed in it, a large seven-passenger touring car and an electric. The building is heated by a coal stove, but the danger from an explosion with this form of heat is lessened in a novel way. Two sewer pipes let into the floor and connecting with the outside air serve to form a draft along the floor by which the heavy gasoline fumes which may be present are led outside and away from the stove. There is installed a charging switchboard for recharging the storage batteries of the electric vehicle and this also is utilized for replenishing the ignition batteries of the gasoline car. The workshop, 8 by 15 feet in size, occupies a separate room and is furnished with workbench, tool cabinet, supply closet and a small stock of repair parts.

Where lack of space demands, it is some-

INEXPENSIVE ONE-CAR GARAGE

This illustration shows a garage that will fill most of the requirements for the housing and care of a small car. It can be quickly constructed and at a very slight expense. The upper half of the walls is made of upright boards with the cracks covered by strips. This is at the home of Conrad Ackerman, of Elgin

times possible to make the garage a part of the residence. This method has been used with very good effect at the home of Edwin J. O'Bierne, of Elgin, where the residence building has been continued to the rear to form the garage. This arrangement solves the heating problem, the hot water heat for the residence being supplied to the car room. Wide double doors at each end of the garage permit the cars to be driven straight through, so that it is not necessary to turn them around. The main drive leads through a portico extended from the front porch of the house to the garage, while a fork leads direct from the doors of the garage to a side street. From the other doors a drive passes to the street around the neighboring house. An electric car as well as a gasoline vehicle are housed here and a charging board is installed.

Old Barn Remodeled

An old barn was remodeled to house the more modern means of locomotion at the home of M. C. Eppenstein, of Elgin. The rebuilt structure is a two-story frame building painted white with a dark green roof to harmonize with the appearance of the residence. Double doors were cut on opposite sides of the first floor so that the cars may be driven straight through, thus doing away with the necessity for turntables or other arrangements for turning the cars around. The car room is divided in half by a partition in which is a sliding door so that one part may be used as a repair room. Opening off the main car room is a tool room, 4 by 6 feet in size. A private telephone gives communication with the principal rooms in the house. Living quarters for the chauffeur are provided on the second floor, part of which is partitioned off as a storage room.

Simple Two-Car Garage

A very simple two-car garage which is notable not only for the completeness of its equipment but as well in the manner in which an unpretentious design is made to harmonize with the architectural features of the large residence is at the home of Allen Retan, of Elgin. The garage is a one-story building of dark red rough brick, with a green tile roof. The double folding doors and the exterior woodwork are finished in white. A feature of this garage is that the cement floor is higher in the middle than at the sides, so that all the waste water and oil drains out to the sides and there is no slop under the cars. The illustration of the interior will show the workbench and other equipment, as well as the charging board with which the storage batteries of the electric car are recharged.

Another two-car garage in the same town is that of J. Fletcher. This is a frame structure one story in height, painted white with brown trimmings. Double folding doors give access from a very ambitious cement drive which is just being completed. This drive passes clear through the lot between house and garage from one street to the next. A branch passes the porch of the residence to a third street in front, while immediately in front of the garage is a very wide turning platform. A portion of the building is partitioned off for a tool room and workroom. This is about 10 by 18 feet in size and is equipped with workbench, tool locker, and spare parts. The usual combination of electric lights and stove heat are in evidence.

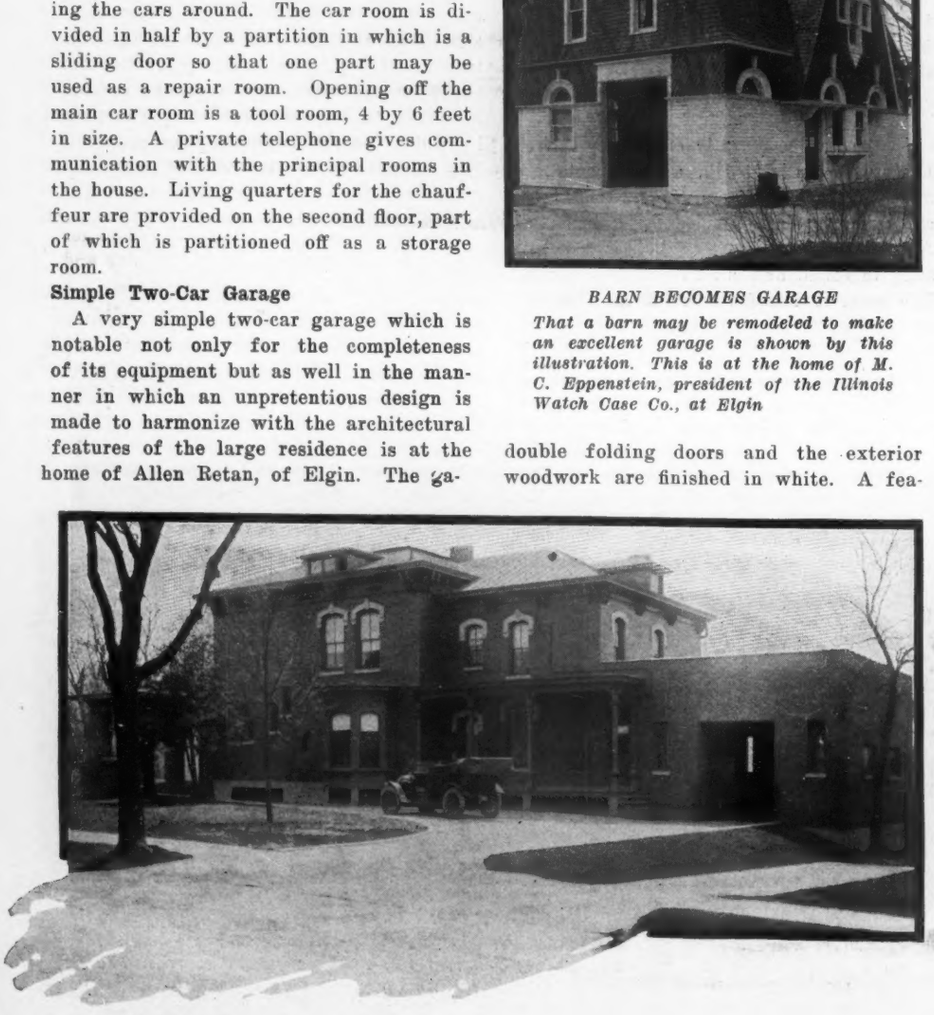
Storage of gasoline often is a problem,

A COUNTRY BOULEVARD

As a substitute for asphalt streets and city parks the suburban motorist has graveled or macadam roads and natural scenery

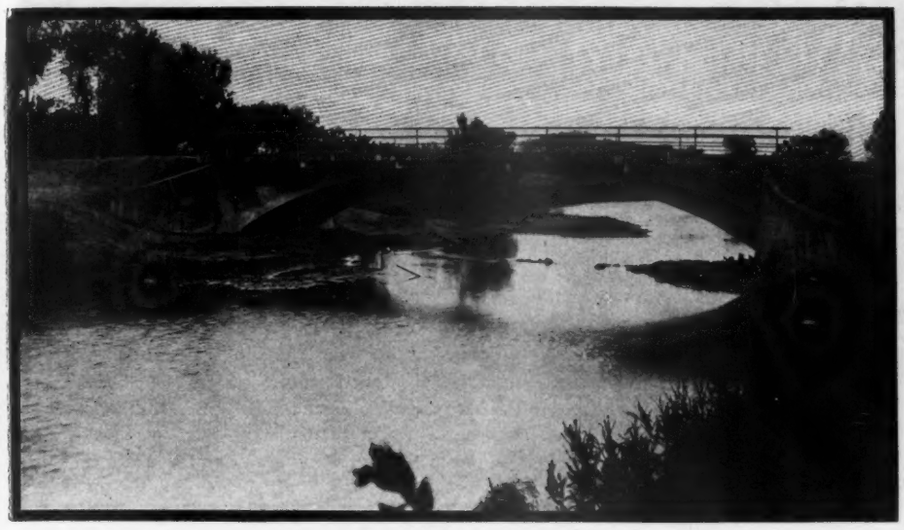
BARN BECOMES GARAGE

That a barn may be remodeled to make an excellent garage is shown by this illustration. This is at the home of M. C. Eppenstein, president of the Illinois Watch Case Co., at Elgin



GARAGE A PART OF HOUSE

Here the residence of Edwin J. O'Bierne is extended to the rear to form a shelter for the motor cars. Double doors on both sides permit the cars to pass clear through the building so that it is unnecessary to turn the cars around. The car room is heated from the hot-water heating plant of the residence. Main drive leads through the portico extended from the front porch



BRIDGE ON SANTA FE TRAIL

The Santa Fe trail is one of the many great motor roads for which credit is due the country motorist. Gravel roads and concrete bridges are the rule

especially when it is not desired to go to the expense of one of the recognized types of underground tanks. One suburbanite, Conrad Ackerman, of Elgin, Ill., has solved the problem to his own satisfaction, although his method might not meet with the approval with the authorities everywhere. On the stump of a tree between the street and the little one-car garage is a 60-gallon tank in which the supply of fuel is kept. The tank is painted a brilliant red and acts as its own danger signal.

Cement Most Favored

Cement is perhaps the most favored of all the materials used in garage construction, but there is often difficulty in matching the house when the latter is not of the gray cast of untreated cement. A house of buff brick can be matched in cement if a wash of the proper shade is used on the cement surface of the garage, or if some of the coloring ingredients sold for the purpose are mixed with the cement. The former method was employed in the garage of John W. Chewning, of St. Charles, a suburb of Chicago in the Fox river valley. The building is of frame construction covered with buff rough-cast cement. It is about 18 by 24 feet in size and is intended for the housing of one car. Part of the space of the interior is taken up by a stairway which leads to the storeroom on the second floor.

INEXPENSIVE CEMENT GARAGE

The building shown in this illustration is an example of the inexpensive type of cement garages. The cement is spread directly on the boards that form the inside finish

In one of the newer country homes along the banks of the Fox river is an odd combination of garage, chauffeur's quarters and cow stable. The building which shelters this unusual assortment is situated on a hillside in such a way that from the house and the road it presents the appearance of a one and one-half-story garage with a graveled drive leading from the house. At the rear the cement basement is at ground level, and the cows and horses are housed in it. Stairs inside the car room lead to the chauffeur's room and store room on the floor above. The building is heated by a steam boiler in the basement.

Economy of Small Garages

Summing up, it will be seen that there is a considerable item of economy in the small suburban garage, which is a strong factor in the rapid growth of the suburbs and the country districts surrounding our larger cities. The average city motorist must store his car in a public garage, where often it is not only inconvenient to get at when it is wanted but where it is just as hard to return it at the completion of a trip. He has no storage facilities and must pay garage prices for oil, gasoline and all the other supplies which may be needed for the car. Every little attention, so needful for the proper operation of the car, must be paid for, even though the owner would much prefer bestowing that care himself. When the car is kept in a private garage it always is convenient and the interest on the cost of construction is of little moment as compared with the rental charged in the public garages of the city.

This influence, in addition to the manner in which the motor car brings the city and country closer together, has resulted in an exodus of motorists to the outlying towns and rural districts. That such is the case is evidenced by the number of small private garages that are springing up in these localities.

The cost of construction of a small private garage in the country is moderate, as compared with the expense connected with a like structure in the city.

TWO-STORY GARAGE

The garage of John W. Chewning, of the St. Charles Condensing Co., is a two-story building with the exterior covered with buff rough-cast cement. The color matches the buff bricks of the house and the dormer window in the roof, which the dormer window in the roof makes the similarity stronger. The second floor is unfinished and is used as a storeroom, but was designed to be finished later as a driver's quarters if needed

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The Modern Demonstration

TO sell a motor car is a far different proposition than disposing of other bulky merchandise. The customer does not enter the store, look over the car, study its lines, listen to the song of the salesman, gossip about the color and then place the order. If he did the selling of cars would be simplified and the profit of the agent would be greatly enhanced. Unfortunately the prospective buyer wants to be shown. He wants to know how the car picks up on high, how it can climb a hill, how it is controlled in congested business sections, whether the tonneau is easy riding and a thousand little points that only can be answered by means of actual demonstration. That show-me disposition gave birth to the demonstration which has made life a burden to the dealer, largely because the privilege is so much abused. Now everyone in the trade is familiar with the person who shops along the street, probably with no intention whatsoever of buying, but sponging on the trade for free rides, taking up the time of the dealer and putting him to needless expense.

ALL kinds of schemes have been tried to kill off the joy-rider, but few have been successful. Nowadays it is hard to tell who intends buying a car, judging by personal appearance. With the farmers buying so freely, even the most poorly dressed person who wanders into a motor car salesroom may be possessed of a roll of bills which he is prepared to exchange for a car. Therefore it behooves the salesman to be diplomatic. The joy-rider knows this and takes advantage of it. Now the dealers have to match their brains with his and try to outstrip him in cunning. Different methods are taken to do this, but it yet remains to discover one that fills every bill. It would seem, however, as if the New York agents have hit upon something that will act as a sort of a brake on the joy-rider. The New Yorkers have banded together and decided to fight against long demonstrations. Now they will ask those who ask for trips of 100 or 150 miles to make a deposit first that will cover the expense of such a trip in case the sale is not made. If the customer buys the car, then the deposit will be credited to the customer.

IT would seem as if these long demonstrations are useless, for nowadays no one at all versed in motoring lore doubts the stamina of the average car. It is only on the fine points that the wise purchaser wishes to be informed, and these he ought to be able to learn in a short trip of 20 to 25 miles. Such a trip will show the power and quietness of the motor and the easy riding qualities of the car itself. Few dealers are unwilling to do this for a prospect.

WITH the commercial truck it is, of course, a different proposition. The average business man is ignorant of the possibilities of the power wagon and he has to be shown how economically it can be operated; how far superior it is to the horse service; how much money he can save by using it; how much time he saves and how much it costs to operate it. Therefore he must have a demonstration to be convinced. This state of affairs probably will last for several years until the time comes when the mercantile world has been so educated that motor cars will be purchased just the way horse-drawn vehicles are—on the reputation of the concern making them and which would eliminate the demonstrations and thus save both parties time and money.

Little Things That Count

NORMAL spring, something exceptional, in the middle west at least, has brought out the tourists much earlier than usual this year, and already the highways are dotted with parties hiking hither and yon. Roads in general are in better shape than usual, and all signs point to one of the most interesting seasons of touring motoring ever known in this country. All of which leads up to the subject of preparing for these tours.

THE real enjoyment of motoring in the country on long jaunts that may last several days is found in being ready for every emergency or as nearly so as is possible. But it has been demonstrated more than once that many motorists make ready in a slipshod manner, the result being that once out on the road they encounter mishaps galore. An example of this was had only the other day when a little expedition sallied forth for a double-century trip, something not much out of the ordinary and which ought to have been made without mishap. Twenty miles out and a puncture developed and it was discovered that there only was one spare inner tube in the car and that was a leaky one. No tire repair outfit was found, and so the driver was forced to use the leaky tube. It would hold air, but only for 10 or 15 minutes, so that three or four times each hour stops had to be made to pump up. The turning point in the trip finally was reached, a big city, but instead of buying another inner tube and thus eliminating all the trouble, it was thought the leak was caused by a defective valve, which was changed. But it wasn't the valve and the pumping was resumed at frequent intervals.

NATURALLY all this took time, so that the shades of night dropped with the party still far from home. Then it was discovered there were no gas lamps on the car and that even the side lights were without kerosene. The latter problem was solved easily, but without headlights the pace became a crawl. Finally the crippled car ran into a bank at an unexpected turn, and had it not been for another car catching up and loaning another casing and tube, as well as a pump to replace the one that had become broken, it is doubtful if the careless ones would have got home that night—it was midnight when they checked in.

THIS but calls attention to the fact that no one should start out on a country trip unless it is absolutely certain that the car is equipped with everything necessary for the comfort of the party. The gasoline tanks should be full and also the oiler. A spare can of lubricant is well worth the while. There should be an extra casing strapped on, and one should be certain the inner tubes are in good condition. Also there should be tire-repair outfits that could be used if it was absolutely necessary. The tool kit should be gone over and the driver know that he had tools that could be used for ordinary repairs at least.

IF commonsense prevails in outfitting for a tour, or even a short journey, then one can sally forth into the country without much fear of trouble. The peace of mind that goes with this knowledge is well worth the price paid for the extras. There should be no guessing about what is in the tool kit, no thinking a tire will stand such a short journey—there should be certainty about everything. Carelessness in this regard has given motoring more than one black eye and should be avoided.

Hoosiers Anticipate an Immense Crowd

Indications Point to 75,000 People Attending 500-Mile Race on Memorial Day—Careful Plans Being Made for Handling Big Contest

INDIANAPOLIS, IND., May 13—From a conservative estimate, based on the present demand for tickets, the speedway management predicts that at least 75,000 people will watch the running of the 500-mile race on Memorial Day.

So great is the demand for accommodations that for once Indianapolis is overtaxed, but the citizens have responded with a will, and the result is that the majority of the residences have become places of refuge for the visitors. The speedway management has established a room bureau, which has listed hundreds of rooms for the benefit of visitors, and this bureau is assigning rooms to all who request them. The rooms will be ready for use the nights of May 29 and May 30, and a clerk will be at the speedway offices all night to give the visitors a place to lodge. There is no need of a single visitor going without a bed and excellent accommodations. Correspondence with the speedway room bureau will settle any questions for the prospective spectators.

The same conditions has caused the speedway people to increase the seating capacity of the grounds, until now, under the hands of a throng of workmen, there is almost three-quarters of a mile of solid stands to seat all who come. In addition to this, more than 200 acres of ground have been prepared to park cars and arranged so that the occupants of the parked cars may view the race.

Seating Capacity Increased

Since the September meeting of last season, the seating capacity has been increased and many changes have been made. The speedway has had an army of men at work building the new stands, the largest of these being the paddock box stand of over 300 boxes, and the management will be able to seat and accommodate 75,000 spectators, according to their estimates. The painters have been busily plying their brushes and making new signs to direct the patrons over the big track and to the various stands.

Special trains will be run from Chicago, Cleveland, Detroit, Cincinnati, and Louisville, and the passengers will live in the trains while in the city. The advance seat sale has been a surprise, even to the most optimistic, and the management is ready to take care of any sized crowd, stating there will still be seats for sale on the day before the race for the tardy ones. A bureau of information will be established, and a list of available rooms in town will be compiled.

The race will start at 10 o'clock and the gates will be opened at 6:30 a. m. The trains and traction cars will begin service to the grounds at 6 o'clock. Eastern racing spectators have for many years foregone the pleasure of a night's sleep before the Vanderbilt and spent the night at the course. While the 500-mile race does not start at daybreak, it is probable that long before old Sol pokes his rays over the horizon, a line of real, dyed-in-the-wool motor fans will be in line waiting the opening of the gates to gain points of vantage in the free stands.

How Scoring Will Be Done

One of the perplexing problems that had to be solved by the speedway management in preparing for the big race was the scoring of the event. When the plans were laid it was thought that forty cars would be a big estimate, and while there is much gratification in the size of the list of forty-six cars which have been drawn to the Hoosier oval by the lure of a purse now exceeding $30,000, with more side purses or prizes promised, a number of perplexing problems have thereby arisen.

One hundred men will be employed on the day of the race to keep official record of the standing of the competitors and to keep the vast throng informed on their positions. Four Burroughs adding machines, two Columbia dictaphones, the Warner horograph, four big score boards, each over 100 feet in length, opposite all the stands, and the telephone system will be used in the plan.

As yet Moross has not named a driver for the second of the two Benzes he has entered, but it may be Patschke. Burman is his only selection so far. Len Zengel, winner of the Fairmont park road race, has been named as a relief driver of the National team, while the Velie has picked R. Jeffkins, an Australian, as the alternate of Hall and Gibbons. Another change announced is that Eddie Hearne, of Chicago, will drive a Fiat instead of a Bez.

Moross Names His Drivers

Indianapolis, Ind., May 15—Upon his arrival in this city, Ernest Moross announced the drivers who will pilot the two Benz cars entered by Moross in the 500-mile international sweepstakes to be held on the Indianapolis motor speedway May 30. The drivers will be Billy Knipper and Bob Burman. There had been rumors that Patschke would drive the car for which Knipper has been named.

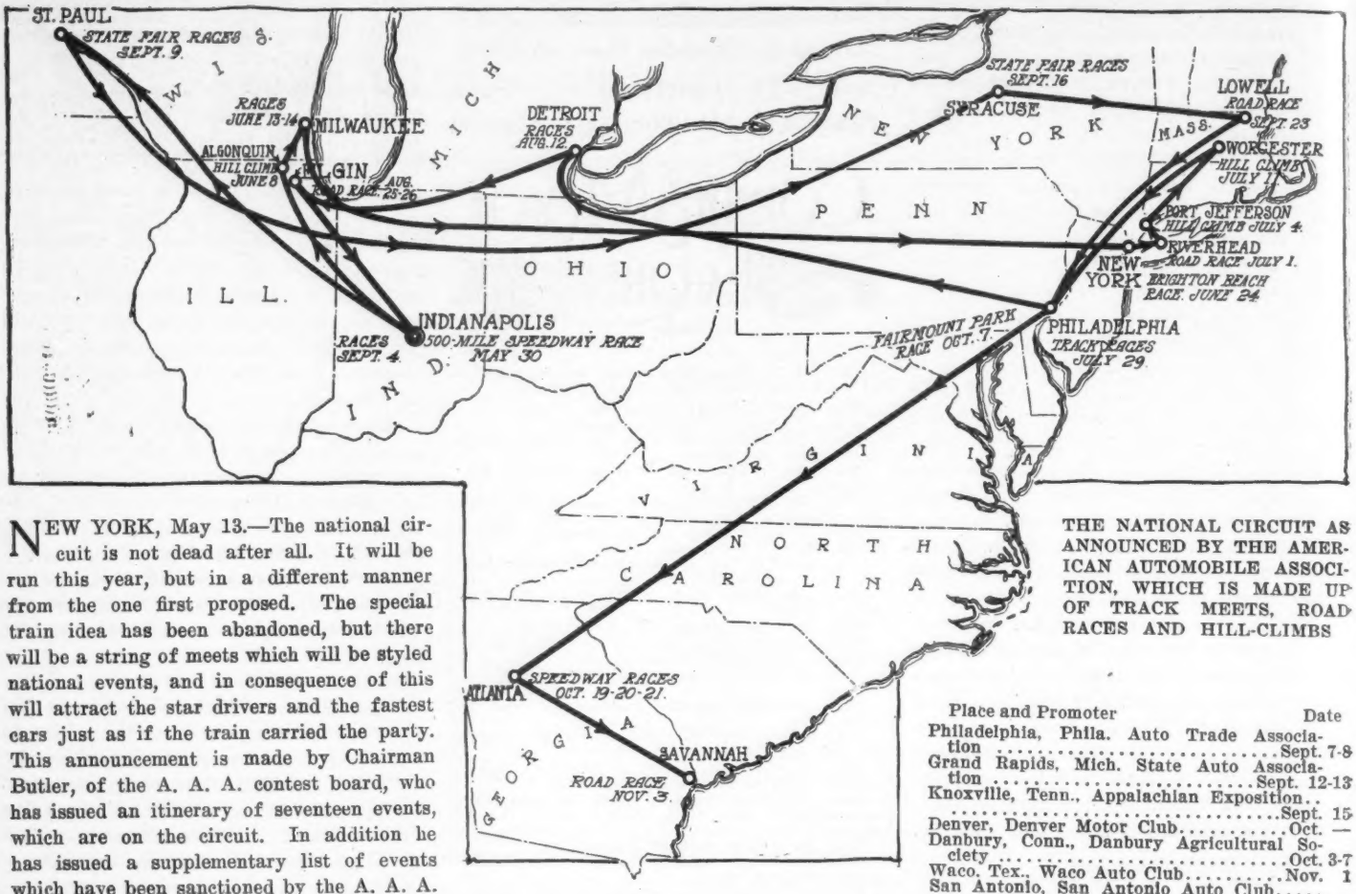
Burman's car will have a bore of 5⅛ and a stroke of 6 5/16, making a piston displacement of 520 cubic inches. The car to be driven by Knipper will have a piston displacement of 444 cubic inches, the bore to be 4⅞ and the stroke 5⅞.

Fred J. Wagner, who will be the official starter, has been in the city arranging the manner of starting. It is likely the cars will run one lap at from 30 to 40 miles an hour, with a pilot car in the lead. The pilot car will drop out at the end of the first lap, which will not count in the race. During the first lap, the cars will jockey for position.

It is the intention to line the cars up in rows of eight or ten cars, in the order in which the cars were entered. This will prevent any claims of favoritism and give every car an equal advantage.

May 16-19—Four-leaf clover endurance run of Automobile Club of Washington, D. C.
May 21—Hill-climb, Limonest, France.
May 21—Ries hill-climb, Austria.
May 22—Reliability run of Long Island Auto Club, Brooklyn.
May 24—Truck run of Los Angeles Examiner.
May 24—Reliability of Lancaster Automobile Dealers' Association, Lancaster, Pa.
May 24—Hill-climb of Birmingham Motor Club, Birmingham, Ala.
May 25—Touring car kilometer speed trials, Le Mans, France.
May 25—Fuel economy test of Chicago Motor Club.
May 25 or 28—Meuse hill-climb, Belgium.
May 27—Five-day tour to Indianapolis of Chicago Automobile Club.
May 28—Hill-climb, touring cars, Le Mans, France.
May 28—Touring car reliability trials in Germany.
May 29-31—Tour to Indianapolis of Chicago Motor Club.
May 30—Reliability run of Missouri Automobile Club of St. Louis.
May 30—Five hundred mile International sweepstakes race, Indianapolis motor speedway.
May 30—Track race of Denver Motor Club.
May 30—Track race of South Jersey Motor Club, Camden, N. J.
May 30—Track race, Walter Hempel, Lakeside, Cal.
June 1—Speed trials, Bucarest, Roumania.
June 3—Floral parade of Chicago Automobile Trade Association.
June 4—Hill-climb, Trieste, Australia.
June 8—Algonquin hill-climb, Chicago Motor Club, National circuit.
June 10-11—Track meet, Chicago, Homer George, promoter.
June 10—Reliability run for electrics of Quaker City Motor Club, Philadelphia.
June 10—Track race, Philadelphia Auto Trade Association.
June 13-14—Milwaukee track races, state fair grounds, National circuit.
June 15-16—Interclub reliability match, Chicago Automobile Club-Chicago Athletic Association.
June 17—Portland hill-climb, Maine Auto Association.
June 17—Ossining hill-climb, Upper Westchester Auto Club.
June 18—Voiturette and light-car road races, France.
June 21-29—Glidden tour from Washington, D. C., to Ottawa Canada.
June 19—Reliability run of Hyperion Field and Motor Club, Des Moines, Ia.
June 20—Reliability run of St. Louis Auto Club.
June 24—Brighton Beach races, New York, National circuit.
June 24—Hill-climb of Quaker City Motor Club, Philadelphia.
June 25—Grand prix of Automobile Club of France.
June 25—Endurance contest, Denmark.
June ——Hill-climb, Norristown Auto Club, Norristown, Pa.
June ——Reliability run of Denver Motor Club.
June ——Reliability run of Oklahoma Auto Association.
July ——Track race, Panhandle Auto Fair Association, Amarillo, Tex.
July 1—Road race, Riverhead, L. I., National circuit.
July 1-3—Reliability run of Motor Contest Association through Catskills.
July 4—Hill-climb, Port Jefferson, L. I., National circuit.
July 4—Road race, Kern County Merchants' Association, Bakersfield, Cal.
July 4—Track race of Wolverine Auto Club, Detroit.

National Circuit in Modified Form



THE NATIONAL CIRCUIT AS ANNOUNCED BY THE AMERICAN AUTOMOBILE ASSOCIATION, WHICH IS MADE UP OF TRACK MEETS, ROAD RACES AND HILL-CLIMBS

NEW YORK, May 13.—The national circuit is not dead after all. It will be run this year, but in a different manner from the one first proposed. The special train idea has been abandoned, but there will be a string of meets which will be styled national events, and in consequence of this will attract the star drivers and the fastest cars just as if the train carried the party. This announcement is made by Chairman Butler, of the A. A. A. contest board, who has issued an itinerary of seventeen events, which are on the circuit. In addition he has issued a supplementary list of events which have been sanctioned by the A. A. A. —fifty-four in all, which will take their chances in getting the attractions.

In issuing his bulletin the chairman makes the following explanation as to the national circuit:

"Owing to unforeseen circumstances in connection with arrangements for railroad equipment and special train movement of the proposed national circuit, it will be necessary this year to carry out the circuit idea in a somewhat modified form. The special train will not be used, but the logical sequence of circuit dates will be preserved and dates for national circuit meetings have, after conference with the Manufacturers' Contest Association, been assigned by the contest board.

"As originally planned, in order to maintain uniform and competent administration of the contest rules, national circuit officials will be named by the contest board, and the compensation for the services of such officials will be borne by the promoter of a national circuit meeting. These officials are a referee, starter, technical committeeman and timer, with electrical timing apparatus."

The following national circuit dates have been assigned by the contest board, subject the necessary requirements:

Place	Date
Indianapolis speedway, 500-mile race	May 30
Algonquin, Ill., hill-climb	June 8
Milwaukee, state fair grounds track	June 13, 14
New York, Brighton Beach	June 24
Riverhead, L. I., road race	July 1
Port Jefferson, L. I., hill-climb	July 4
Worcester, Mass., hill-climb	July 11
Philadelphia, Belmont track	July 29
Detroit, Mich., state fair grounds track	Aug. 12
Elgin, Ill., road race	Aug. 25, 26
Indianapolis speedway, meet	Sept. 4
St. Paul, state fair grounds track	Sept. 9
Syracuse, state fair grounds track	Sept. 16
Lowell, Mass., road race	Sept. 23
Philadelphia, Pa., Fairmount Park, road race	Oct. 7
Atlanta speedway	Oct. 19, 20, 21
Savannah, light car road race	Nov. 3

It will be noted that neither the Vanderbilt nor grand prix is included in the list, which would seem to indicate that these classics hardly will be renewed this year.

The following is a list of the proposed contests for 1911, with approximate dates, other than national circuit meetings:

TRACK RACES

Place and Promoter	Date
Oakland, Cal., 24-hour race, Oakland Motordrome	May 13-14
Cincinnati, O., Cincinnati Auto Dealers' Association	May 13-14
Nazareth, Pa., South Jersey Motor Club	May 13
Jacksonville, Fla., E. A. Moross	May 14
Denver, Colo., Denver Motor Club	May 30
Camden, N. J., South Jersey Motor Club	May 30
Lakeside, Cal., Walter Hempel	May 30
Chicago, Homer C. George	June 10-11
Philadelphia, Phila. Auto Trade Association	June 10
Amarillo, Tex., Panhandle Auto Fair Association	July —
Detroit, Wolverine Auto Club	July 4
Denver, Denver Motor Club	July 4
Taylor, Tex., Taylor Auto Club	July 7
Philadelphia, Norristown Auto Club	July 8 or 15
Denver, Denver Motor Club	Sept. 4
Philadelphia, Phila. Auto Trade Association	Sept. 7-8
Grand Rapids, Mich. State Auto Association	Sept. 12-13
Knoxville, Tenn., Appalachian Exposition	Sept. 15
Denver, Denver Motor Club	Oct. —
Danbury, Conn., Danbury Agricultural Society	Oct. 3-7
Waco, Tex., Waco Auto Club	Nov. 1
San Antonio, San Antonio Auto Club	Nov. 9-10-11
Phoenix, Ariz., Maricopa Auto Club	Nov. 10
Los Angeles motordrome	Nov. 30, Dec. 2-3
Los Angeles motordrome	Dec. 25-26

HILL-CLIMBS

Place and Promoter	Date
Birmingham, Ala., Birmingham Motor Club	May 24
Norristown, Pa., Norristown Auto Club	June —
Portland, Me., Maine Auto Association	June 17
Ossining, N. Y., Upper Westchester Auto Club	June 17
Philadelphia, Quaker City Motor Club	June 24
Denver, Denver Motor Club	Aug. —

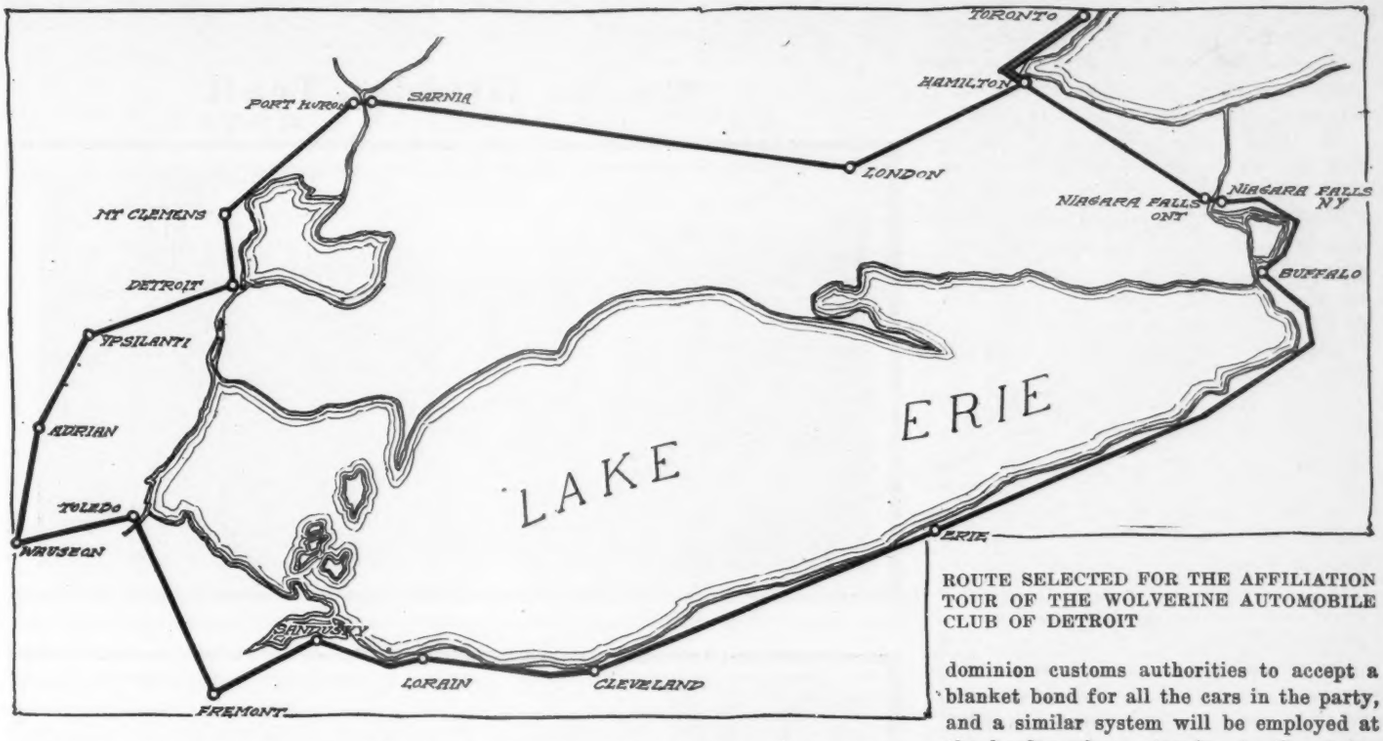
ROAD RACES

Place and Promoter	Date
Bakersfield, Cal., Kern Co. Merchants' Association	July 4
Los Angeles-Phoenix, Maricopa Auto Club	Nov. 7-10

RELIABILITY

Place and Promoter	Date
Washington, Auto Club of Washington	May 15
Lancaster, Pa., Lancaster Auto Dealers' Association	May 24
Brooklyn, N. Y., Long Island Auto Club	May 22
Los Angeles (trucks), Los Angeles Examiner	May 24
Chicago, Chicago Motor Club	May 25
Denver, Denver Motor Club	June —
Oklahoma, Oklahoma Auto Association	June —
Philadelphia, Pa. (electrics), Quaker City Motor Club	June 10
Des Moines, Hyperion Field & Motor Club	June 19
St. Louis, Auto Club of St. Louis	June 20
Philadelphia, Pa. (trucks), Quaker City Motor Club	July 14
Wisconsin, Wisconsin State Auto Association	July 17-22
Cleveland, Cleveland News	July 17-18-19
Chicago (trucks), Chicago Evening American	Aug. 1
Philadelphia, Quaker City Motor Club	Aug. 12
Chicago (trucks), Chicago Motor Club	Sept. 18-19-20
Oklahoma, Daily Oklahoman	Sept. 1
Harrisburg, Motor Club of Harrisburg	Oct. 16-17-18
Chicago, 1,000-mile, Chicago Motor Club	Oct. 9-13
Philadelphia, Quaker City Motor Club	Nov. 2-3-4

Wolverines Plan An Affiliation Tour



ROUTE SELECTED FOR THE AFFILIATION TOUR OF THE WOLVERINE AUTOMOBILE CLUB OF DETROIT

DETROIT, Mich., May 15 — Definite plans announced for the big run of the Wolverine Automobile Club of Detroit give the affair even more scope than originally was attached to the mere decision of the club to hold the event. As the tour now shapes up, it will be an affair in which the clubs of at least two other cities will take parts as prominent as Detroit's. Advices received from the Automobile Club of Buffalo and the Cleveland Automobile Club are of a most favorable nature, definite promise having been made of co-operation on the part of both organizations. The tour will be of a circular character, including both the other cities, and will be so arranged that motorists affiliated with clubs in cities through which the tour passes will be tendered all the advantages of the hotel rates and other special accommodations arranged for the tourists.

Chairman Harry R. Robinson of the Wolverine club's runs and tours committee is inclined to the belief that the tour will be one of the largest on record, with from 200 to 300 cars in line, about evenly divided among the three largest participating organizations.

Itinerary of Tour

The tour will start at Detroit Thursday, June 22, with the Wolverine contingent's cars alone. They will make Toledo the first night control, passing through Ypsilanti, Adrian and Wauseon, O. At Toledo an opportunity will be given for the local motorists to join the line of march. No definite reply has as yet been received, however. The second day's run will be to Cleveland, where, on Saturday morning, they will be joined by the delegation from the Cleveland Automobile Club. The third day's run will be from Cleveland to Buffalo. The fourth day being Sunday, the tourists will make a short run to Niagara Falls and will delay their departure long enough to permit the members of the Automobile Club of Buffalo to come out to the falls Monday morning, when the entire entourage will leave for Toronto, the turning point of the tour. Returning through Canada, the tour will pass through Hamilton to London, where a night control has been established. The final and seventh day of the run will be from London to Detroit, via Sarnia, Port Huron and Mt. Clemens.

The delegations from the other cities will, of course, continue the circuit from Detroit on, dropping off at their respective home cities. The event has been appropriately dubbed the affiliation tour.

After long deliberation the local organization has determined to make the event non-competitive in character. An effort will be made to reduce speeding to a minimum and to strictly observe the laws of the districts through which the itinerary will run.

Many of the Detroiters will take their families. The mileages are all small, with one exception, the longest being 148 miles. The 195 miles between Cleveland is by far the longest day's run, but is not so strenuous as to be outside the experience of almost every motorist, providing the roads are reasonably dry. Late starts and early finishes are to be possible for every day of the run.

Arrangements have been made with the dominion customs authorities to accept a blanket bond for all the cars in the party, and a similar system will be employed at the border when returning to the states. Hotel accommodations at both noon and night controls, as well as garage accommodations, will be arranged for in advance. In fact, most of these details have now been completed.

The Wolverine club is insistent that none but members will be allowed to enter cars. It is making the tour the occasion for a hustling campaign for membership, and already has received a large number of applications from motorists who desire to avail themselves of the privileges of the run. Hospital cars will accompany the run, with large stocks of extra parts, as well as tires. Several manufacturers are arranging to send cars and mechanics to take care of motorists who own cars of their make.

LATONIA RACE MEET

Cincinnati, O., May 15—The speed carnival, held at the Latonia racetrack, under the auspices of the Cincinnati Automobile Dealers' Association, Saturday and Sunday, exceeded all expectations of the association and proved to be one of the best racing meets ever held in Ohio. In the last race of Saturday, the only accident of the day marred the meet. It was the 1-hour race for non-stock cars of class C, under class E regulations for those not exceeding 600 cubic inches piston displacement, that the accident occurred. Six cars went to the post. Before completing the first lap three came together. The three drivers who were caught in the accident were Bill Endicott, Zeke Hilliard, who was driving a Buick, and Mack Dermond, in a Schacht. When

the tire on Endicott's car burst, the machine swerved right in the way of the the Schacht car, which collided with full force while going at the rate of nearly a mile a minute. The Buick hit right in the center of the two cars and there was a mass of debris in the pathway of the other three cars. The three drivers were seriously injured but not fatally.

The three 10-mile races were all exciting and fast and provided as good a sport as could be expected. The free-for-all non-stock 10-mile developed into a great battle between the Firestone-Columbus, driven by Lee Frayer, and a Cino, driven by John Raimey. Frayer won the race in 10:49⅘, 3 seconds ahead of the Cino.

Sunday's races were exciting, including a thrilling smashup. Bill Fritsch, driving a Buick, was perhaps fatally injured. Going around the clubhouse turn were Fritsch driving a Buick, and J. K. Gilchrist driving a Firestone-Columbus. They were neck and neck fighting for second place and at the same time trying to overtake John R. Raimey, who was in the lead in a Cino. Suddenly Gilchrist's car threw a wheel and swerved right in the direction of Fritsch's Buick. A collision which could be seen and heard in all parts of the track was the result. Fritsch was hurled high in the air. He landed with the entire car broken and literally smashed to pieces upon him. He was severely and probably fatally injured about the head, back and legs.

A miraculous escape saved Gilchrist from probable death also. Seeing that Fritsch's car was hurtling through the air immediately above him, he put on all power, although he had but three wheels to ride on and took one jump from the fatal spot.

After seeing the peril of letting the other contesting machines go on with the race the judges concluded to call the event off and have it run at the next meet to be given by the Cincinnati Automobile Dealers' Association. Had the race continued without further accident Raimey, in the Cino No. 2 would have won the cup. Although he had really covered 12 miles the timers snapped the time at the end of the tenth mile, the completion of which saw the accident. He made it in 10:38 and on the third lap, when the race was at its hottest, broke Barney Oldfield's record for 1 mile over the Latonia track. He took ½ second off Barney's previous record, his time being :57. Besides creating a new record he also went around the track several times in :61. Summaries:

SATURDAY'S RESULTS

Five miles; nonstock, for care of Class C, with piston displacement of 161 to 230 cubic inches—J. W. Oberting, E-M-F, won; Emmet Meddock, Empire, second; H. Heisey, Buick, third. Time, 5:58⅘. Only three cars contested.

Five miles; nonstock, cars of class C, with piston displacement of 231 to 300 cubic inches—J. H. Raimey, Cino, won; Lee Frayer, Firestone-Columbus, second; H. Heisey, Buick, third. Time, 5:15⅘. Two Schachts, two Ohios and a Cole also competed.

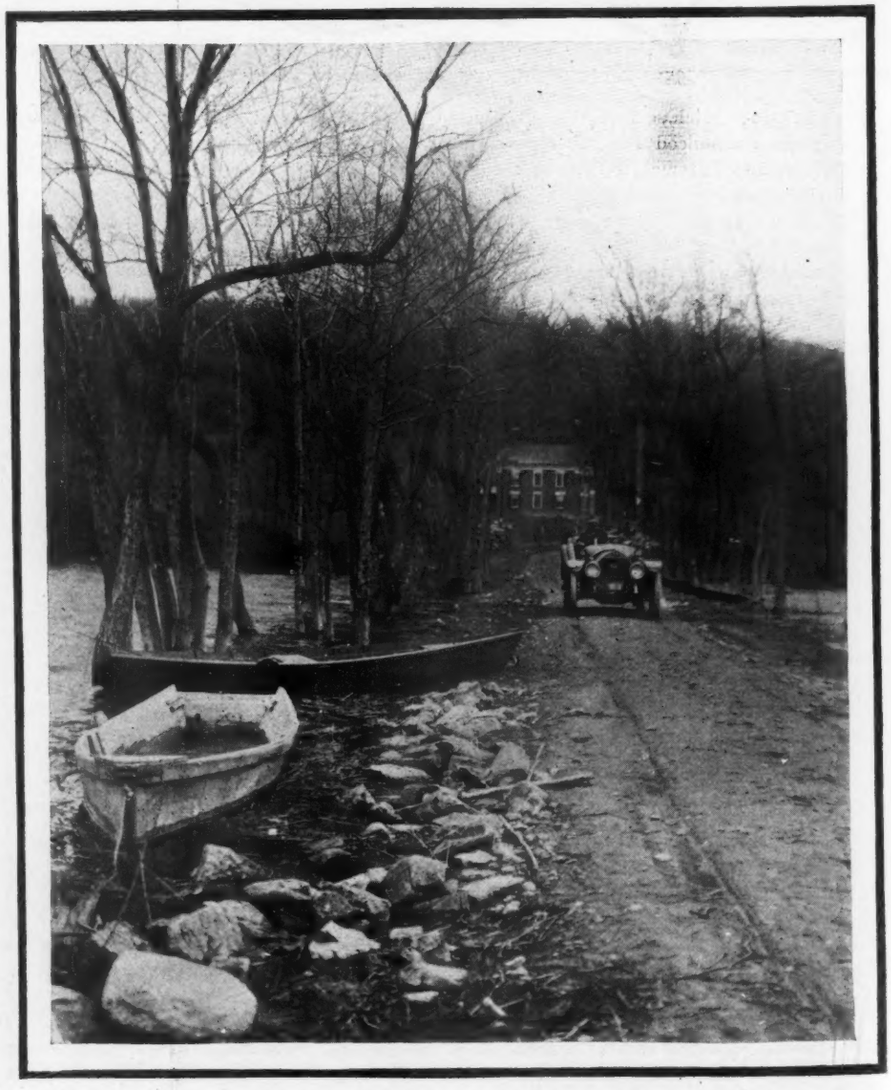
Ten miles; nonstock, for cars of class C, with piston displacement under class E regulations ranging from 301 to 600 cubic inches; H. Heisey, Buick, won; H. F. Fulton, Marmon, second; J. K. Gilchrist, Matheson, second. Time, 10:57⅘. Only three cars contested.

Ten miles; free-for-all nonstock—Lee Frayer, Firestone-Columbus, won; J. R. Raimey, Cino, second; H. Heisey, Buick, third. Time, 10:49⅘. One Cole, two Ohios and another Buick also competed.

Ten miles: free-for-all handicap—H. Heisey, Buick, won; Emmet Meddock, Empire, second; J. R. Raimey, Cino, third. Time, 10:43⅘. A Schacht, E-M-F, Buick and Firestone-Columbus also competed.

One hour race; nonstock, for cars of class C under class E regulations for those not exceeding 600 cubic inches piston displacement; for Cincinnati Enquirer trophy; postponed until Sunday.

On the Glidden Trail



GLIDDEN PATHFINDERS FOLLOWING THE CHAMBLY CANAL NEAR CHAMBLY, CANADA —CROSSING SAND BAR BRIDGES ACROSS LAKE CHAMPLAIN

SUNDAY'S RESULTS

Fifteen mile race; nonstock, for cars of C under class E regulations for those not exceeding 600 cubic inches piston displacement for Cincinnati Enquirer trophy—Declared off after 11 miles had been completed on account of accident to Fritsch, Cino No. 2 leading, Buick second and Firestone-Columbus third.

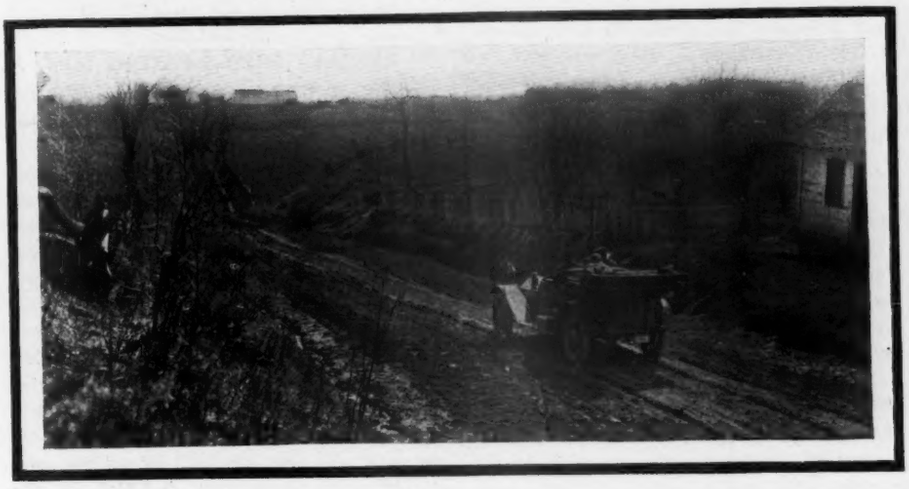
Five miles; for cars of class C, with piston displacement of 161 to 230 cubic inches—Zeke Hilliard, Buick, won; Emmet Meddock, Empire, second; J. W. Oberting, E-M-F third. Time, 6:10⅘. Sackett, driving E-M-F, also contested.

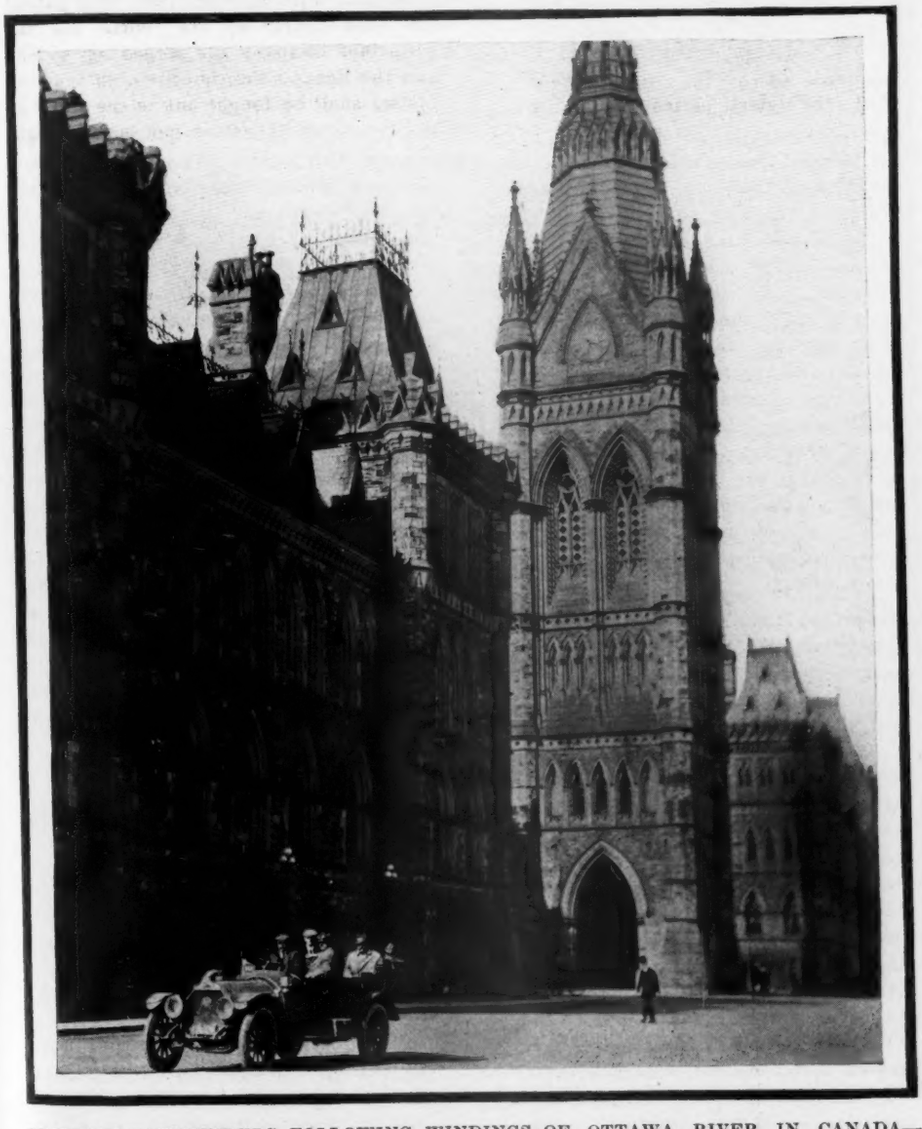
Trial for 1-mile record—J. R. Raimey in a Cino made 1:00⅘; record :57½.

Ten miles; nonstock, free-for-all handicap—J. R. Raimey, Cino, scratch, won; H. F. Fulton, Marmon, scratch, second; Zeke Hilliard, Buick, third. Time, 10:50⅘. Cino No. 1, E-M-F, Schacht and Empire also contested.

Fifteen miles; free-for-all; cars under class C regulations for those not exceeding 600 cubic inches; J. R. Raimey, Cino, won; Walter Donnelly, Cino, second; W. B. Strong, Schacht, third. Marmon, H. F. Fulton driving, also competed but bursted a tire hitting the fence. Time, 16:06⅘.

Canada's Glidden Offering.





GLIDDEN PATHFINDERS FOLLOWING WINDINGS OF OTTAWA RIVER IN CANADA—PARLIAMENT BUILDINGS IN OTTAWA, FINISHING POINT OF TOUR

GLIDDEN ITINERARY ANNOUNCED

New York, May 16—Delaying the publication of the itinerary of the 1911 Glidden tour until arrangements could be made with the hotels along the route, the contest board of the American Automobile Association today announced the official trail. The total distance between Washington, D. C., and Ottawa, Canada, is 1,089 miles the way the Gliddenites will go, passing through nine states and two provinces. The night stops will be Philadelphia, New York, Springfield, Mass.; Boston; Springfield, Vt.; Burlington, Vt.; Montreal, Canada, and Ottawa, Canada. The hill-climb will be held at Worcester, Mass., on June 24, the famous Dead Horse hill having been selected for this important event, which is expected to have considerable bearing upon the result. Entries to the tour close June 1. The complete itinerary of the tour is as follows:

June 21—Washington to Philadelphia, 163 miles; Bellaire, 75 miles, noon stop.
June 22—Philadelphia to New York, 182 miles; Lakewood, 96.6 miles, noon stop.
June 23—New York to Springfield, 146 miles; Waterbury, 93 miles, noon stop.
June 24—Springfield to Worcester, 50 miles, hill-climb at Worcester; Worcester to Boston, 40 miles.
June 25—Sunday in Boston.
June 26—Boston to Springfield, Vt., 142 miles; Keene, N. H., 106 miles, noon stop.
June 27—Springfield to Burlington, 135 miles; Montpelier, 98 miles, noon stop.
June 28—Burlington to Montreal, 110 miles; Alburg, 47 miles, noon stop.
June 29—Montreal to Ottawa, 121 miles; Carillon, 47 miles, noon stop.

BURMAN DRIVES SENSATIONAL MILE

Jacksonville, Fla., May 14—Driving through a blinding rain, Bob Burman sent his Blitzen Benz over the Moncrief park track 1 mile in :55, breaking the state record of :55⅘, held by himself. Burman was covered with mud at the finish of his spectacular drive and many believe that he was lucky to get out alive. In the 5-mile handicap Burman, starting from scratch, drove 3 miles in 2:29⅘, 2 seconds lower than the present world's record of 2:30.55. The rain came up suddenly—while Burman was making his record run, but it did not stop him, and he finished the drive.

BALTIMORE DEALER KILLED

Baltimore, Md., May 15—Robert Oliver Colt Williams, vice-president and treasurer of the Madison Motor Car Co., Velie agent in this city, was instantly killed Sunday evening when his 30-horsepower motor car was wrecked near Autoville, Md., on the Washington-Baltimore boulevard. Miss Helen Griffith, who accompanied Mr. Williams, was taken to the Casualty hospital, Washington, suffering from a contused thigh, hip bruises and a lacerated face. The car turned turtle.

United States Factor in Export Trade

Figures Prepared at Washington Show Importance of America in World's Business in Motor Cars and Parts—Reports On What the Other Countries Are Doing—Interesting Figures

WASHINGTON, D. C., May 14—Motor cars of American manufacture are steadily increasing the share which they supply of the world's demand for that article. March exports of cars and parts thereof showed an increase of 63 per cent when compared with those of March a year ago, while the exports during the 9 months ending with March are practically 50 per cent greater than those for the corresponding period of last year. The total value of cars and parts exported from the United States in March, 1911, was $1,688,947, against $1,007,387 in March, 1910, the increase of $631,560 being especially interesting in view of the fact that during the past year the bureau of statistics of the department of commerce and labor has adopted effective measures to prevent the reporting as exports by collectors of customs, of such motor cars as leave the country for touring purposes only. Under the instructions of the bureau of statistics, only those cars are reported as exports that are actually intended for sale in a foreign country.

Growth of Exports

The growth in the exports of cars and parts thereof has been especially rapid in the last 3 years, the figures for the 9 months ending with March having increased from $3,279,036 in 1909 to $6,382,271 in 1910, and $9,837,181 in 1911, suggesting that the total for the fiscal year which ends with next month will be about $14,000,000. In addition to the figures above quoted of cars and parts thereof exported, the exports of tires, shown separately under the head of manufactures of India rubber, amounted for the 9 months ending with March to $1,325,903.

This growth in the exports of cars and parts thereof occurs in the trade with nearly all the principal countries. Comparing the movements out of the country during corresponding 9 months' periods of the last 3 fiscal years, exports to Canada have increased from $923,475 in 1909 to $2,509,810 in 1910 and $3,884,447 in 1911; those to the United Kingdom, from $931,534 in 1909 to $1,344,600 in 1910, and $1,657,990 in 1911; those to France, from $215,955 in 1909 to $376,166 in 1910, decreasing, however, to $345,222 in 1911. Other European countries, except Italy, show substantial gains. To Mexico the exports of motor cars have also increased since 1909, the total for the 9 months' period of that year standing at $279,739 compared with $406,870 in 1910, and $545,641 in 1911. Marked gains are noted in the exports to South America, British Oceania, and other countries of Asia and Oceania. To British Oceania the exports have increased from $80,308 in 9 months of 1909 to $297,301 in 1910, and $905,684 in 1911; to Asia and other Oceania, from $82,147 in 1909 to $206,452 in 1910, and $614,650 in 1911; and to South America as a whole, from $105,947 in 1909 to $231,834 in 1910, and $594,284 in 1911.

Showing of Canada

Canada leads all other countries as a market for American cars, the total exports to that country in the 9 months of the current fiscal year having been $3,884,447, compared with $1,657,990 to the United Kingdom, $345,222 to France, $185,699 to Germany, $545,641 to Mexico, and $9,837,181 to all foreign countries. During the month of March alone, an even larger proportion of the exports went to Canada —$778,402 out of a total of $1,638,947.

France is the world's leading exporter of cars, the figures of the five leading countries being, for the calendar year 1910, the latest period for which comparative figures are available: from France, $34,466,000; United States, second in rank, $13,190,296; United Kingdom, $12,684,000; Germany, $7,558,000; and Italy, $4,347,000.

The United Kingdom ranks first in the importation of cars, the figures for the calendar year 1910 being $24,989,000, against $2,737,208 for the United States, $2,457,000 for Germany, $1,864,000 for France, and $1,024,000 for Italy.

Imports of cars into the United States are decreasing, the total for March, 1911, having been but $120,829, against $301,236 in March of the preceding year; and for the 9 months ending with March, 1911, $1,583,218, compared with $2,979,756 in the corresponding period of 1910, and $2,622,824 in 1909.

Many Cars From France

Most of the cars imported into the United States come from France, that country being credited in the calendar year 1910 with $1,066,356 worth out of a total importation of $2,080,555, exclusive of parts of cars. The next largest importation was from Germany, $314,577, followed by $312,478 from Italy, $212,969 from the United Kingdom, and $174,175 from all other countries.

Prices of cars imported into the United States are gradually increasing, while those of cars exported are decreasing. The 1,115 complete motor cars imported into the country during the 9 months ending with March, 1909, had an average valuation of $1,834 each; the 1,149 imported in the like period of 1910 had an average valuation of $1,943 each; while 634 machines imported in the 9 months of the current fiscal year show an average valuation of $2,117 each. Meantime the average export price of the cars leaving the country has dropped from $1,768 each, based on 1,610 cars reported in the 9 months of 1909, to $1,285 each for the 4,180 machines exported in the like period of 1910, and $1,127 each for the 7,350 machines which left the country in the corresponding period of 1911.

RENAULT BRINGS PATENT SUIT

Paris, May 6—Louis Renault is credited with being the first to build cars with the radiator on the dashboard having a thermo-syphon circulation with forced draught by means of a flywheel fan. During the last 2 years some European firms have shown their appreciation of this design by copying it boldly, among the copyists being Charron, Bayard-Clement, Unic, Scar and Schneider, in France, and Arrol-Johnstone and others in England. Evidently Louis Renault is not pleased with this sincerest form of flattery, for he has brought an action against the Schneider company for infringement of patent governing a thermo-syphon radiator on the dashboard with flywheel fan. The patent has been upheld by the courts, but the Schneider company has lodged an appeal, and the Renault firm is convinced that the matter shall be fought out to the end. In the meantime an action has been brought against the Charron company, which has also been building cars on these lines for the last two years. Later, it is declared, the Bayard-Clement company will be tackled.

A Motor Age representative visiting the Renault factory was unable to see Louis Renault, who is at present in America in connection with the purchase of a large quantity of machine tools necessary for factory extensions. It was learned, however, from one of the officials of the company that the intention of Louis Renault was not to make infringers of his patent pay a royalty, as is now done by practically all European firms employing the direct drive, but to prevent them making use of the patented disposition. It is declared that the judgment against the Schneider company orders the payment of a royalty on the cars already built and forbids the construction of others of this type.

TROUBLE OVER REGISTRATION

Washington, D. C., May 16—What threatened to be a general outlawing of participants in the four-leaf clover run of the Automobile Club of Washington by the A. A. A. has been straightened out to the satisfaction of all concerned. Upon advices 2 days before start of tour that only five of the nineteen entrants were eligible to start because of non-registration with the A. A. A., the run was postponed. Then the drivers met and determined to start the tour irrespective of any action by the A. A. A.

Those who have the best interests of

the sport at heart here at once got busy with Chairman Butler, who eventually decided to let the tour run as a sociability affair, although in reality it is a reliability contest. With this understanding the contestants started yesterday on the first day's run, which was to Gettysburg and return. All finished with perfect scores, except the Warren-Detroit, which lost 1 point for tightening a grease cup and 3 points for filling the radiator.

The second day's run was to York, Pa., and return, and every car dropped from the perfect score class with the exception of the Velie and Regal roadster. The Stoddard-Dayton lost 59 points for being late at the night control and 33 points for filling the radiator. The Reo lost 3 points for filling radiator, the Marion 3 points for filling radiator, the Buick 3 points for filling the radiator and 8 points for tightening the fan belt, the Ford 3 points for a motor stall, the Warren-Detroit 2 points for taking off the rear mud guards, the Cole 13 points for being late at a night control, 2 points for a stalled motor, 4 points for work on the oiler and 25 points for putting on a spring bolt. The two-cylinder Reo and Krit were withdrawn the first day and the Apperson and Hudson the second day.

The third day's run will be to Hagerstown, Md., and return, with Leonardtown, Md., and return the last day's run.

SOUTHERNERS HOLD BIG RUN

Savannah, Ga., May 13—Forty-seven cars took part in the fourth annual endurance run of the Savannah Automobile Club to Charlotte, N. C., a distance of 315 miles, starting last Tuesday morning. More than forty of these cars made perfect road scores, and now it is up to the technical committee to decide the winners of the prizes. This has not been figured out as yet. The feature of the run was a hill-climb, which was held at Columbia, on a ½-mile hill. The fastest time was made by Leo Browne in a Lozier, who climbed the hill in :48⅘. R. V. Connerat, in a Buick, went up in :49, and J. E. Finney, also in a Buick, did :54. Connerat won the Columbia cup, however, because of having a handicap of 5 seconds. Brown was second and Finney third.

ELMER COMPANY STARTS

Elkhart, Ind., May 15—Possession of the old Sterling plant in this city was taken today by the newly organized Elmer Motor Car Co., which will make the Lohr car. In the new concern are seventeen former Haynes department men. Of these H. H. Elmer, formerly general manager of the Haynes company, is president, while Charles Lohr, a Haynes designer, occupies the same position with the Elmer company. C. C. Craig, formerly manager of the Chicago Haynes branch, is sales manager of the Elmer company. Edward Politz has succeeded Mr. Craig as manager of the Chicago Haynes branch.

Makers Optimistic Over 1912 Outlook

General Motors Co. Decides On Considerable Increase In Production for Next Year, While Packard Looks for Good Season—Rumor Ford Will Build 50,000 for the New Market

DETROIT, Mich., May 15—The General Motors Co. has decided on a considerable increase for 1912 in its schedule of production, the action having been taken at the semi-monthly conference of factory managers in the firm's headquarters in this city. The rate of production was greatly cut for 1911, and as a result several of the company's factories have been unable to fill the demand. Surface indications, it was announced by President Neal, point to a successful season in the coming year. Exactly what increases would be made was a fact not announced. It is not believed, however, that the plan contemplates anything like the rate which prevailed in 1910.

This hopeful view of the market also is taken by the Packard Motor Car Co., which announces receipts during April for the largest number of orders in the history of the plant's business. An even 500 of the firm's 1912 models were ordered by dealers, with definite dates set for delivery.

Ford Will Increase Production

Probably the largest increase will be at the plant of the Ford Motor Co., which, it is rumored in the trade, will in 1912 produce 50,000 motor cars of the model T type. While authentic announcement to that effect has not yet been made, it is understood that orders for material already indicate that an endeavor will be made to attain this figure.

The E-M-F Co. branch of the Studebaker corporation has been turning out seventy-five cars daily for several weeks at its No. 1 plant. Its No. 3 plant is daily putting on men, with the view to speeding up the production of the firm's new three-speed Flanders to a figure which may reach 125 a day.

The Brush Runabout Co. reports that the demand for its cars is surpassing all former seasons. This condition also is in vogue at the Hudson and several other plants.

While the Cadillac company will not be able to build as many cars this year as last, it generally is recognized that an error was made when production at this plant was cut by the orders of the General Motors Co. The plant has been behind orders all spring and has been unable to get materials faster than the rate contracted for during the winter.

Hupp Concerns Merged

An important detail of the past week was the merging of the various Hupp companies—the Hupp Motor Car Co. alone excepted—into one firm, to be known as the Hupp Corporation. There have been five of these companies—the Hupp-Yeats Electric Car Co., the Hupp-Turner Machine Co., the Hupp-James-Guyman Foundry Co., the Hupp-Johnson Forge Co. and the R. C. Hupp Sales Co. The first four of these companies occupy sites adjacent and on Lycaste avenue, Fairview, beyond the plants of the Chalmers and Hudson. While they have been to a certain extent allied and contain many directors interested in two or more of the companies, the change will place them under one management and will enable closer co-operation than when each was conducted as a separate entity. The R. C. Hupp Sales Co. is an organization formed to retail the Hupp-Yeats electric. This firm controls garages in nearly all the prominent cities in this country.

The new Hupp Corporation is capitalized at $700,000, with $400,000 paid in. R. C. Hupp is president, C. D. Hastings, vice-president, and L. G. Hupp secretary-treasurer of the new corporation which has just been formed.

A unique feature of the merger is the fact that all the Hupp corporations are to an extent on a co-operative basis. Each has employes who are sharing in the profits of the concerns through their possession of its stock. While the Hupp Motor Car Co. is not directly concerned in the merger, it sustains close relations to several of the component companies by the purchase of a large share of their products.

New Engine Plant Planned

Announcement is made by the Continental Motor Mfg. Co., of Muskegon, of its intention to erect in the near future a large plant in Detroit. A site has been secured immediately east of the plant of the Hudson Motor Car Co. The plant will cost $250,000, will have 200,000 feet of floor space and will be strictly fireproof. The firm makes the Continental engine, used by the Hudson company and several other motor car manufacturers. Its new departure is largely due to the efforts of F. O. Bezner, secretary of the Hudson company and also chairman of the manufacturers' committee of the Detroit board of commerce. The Continental company will not abandon its Muskegon plant, though the immense scope of the Detroit factory will undoubtedly bring about a general change of administrative headquarters. It is a successor of the Autocar Equipment Co. and formerly was a Chicago corporation. Since moving to Michigan it has greatly increased its business and in Detroit hopes to do even better.

Government Reports Good Roads Boom

WASHINGTON, D. C., May 15—The American people have at last been aroused to the need of good roads, and the astonishing statement is made by Logan Waller Page, director of the office of public roads of the department of agriculture, that, exclusive of Sundays and legal holidays, more than $1,000,000 a day will be spent upon the improvement of the highways in the United States during the road-building season. Mr. Page figures that a greater sum is available for this purpose in 1911 than ever before. Funds have been raised by private subscription, local taxation, bond issues and state appropriations aggregating a total of $140,589,356. According to Mr. Page's figuring, the funds available under the different states are as follows:

Alabama—Bonds have already been voted in Alabama to the amount of $1,330,000, and Jefferson county is to vote on an issue of $1,000,000. The recent legislature passed a law creating a state highway department, and making an annual appropriation of $154,000, to be expended for state aid. In addition to this, the regular funds of the various counties will amount to probably another million dollars, making an approximate total for the state of Alabama of $3,484,000.

Arizona—The territorial road fund for 1911 will be approximately $200,000. This fund is derived from a tax levy of 25 cents on each $100 of assessed valuation in counties covered by the proposed territorial highway system, and 5 cents on each $100 in counties not covered by the proposed system. In addition, local funds by counties are raised in varying amounts, and will probably be sufficient to increase the road expenditures in Arizona to $500,000 for the year.

Arkansas—Information concerning road expenditures in the state of Arkansas is very meager, but the total amount expended for roads in that state in 1904 was $1,395,342.80. It is reasonable to suppose that this amount has increased since that date sufficiently to assume that the expenditures this year will equal $1,500,000.

California—The state of California ranks first among the states in the amount it proposes expending on its roads. San Joaquin county has issued and is expending $1,800,000 on its roads, and San Diego county $3,000,000. At the general election in November, 1910, a proposition was favorably voted upon by the people of the state for the issuance of $18,000,000 of state bonds for road purposes. In addition to this, the local revenues should amount to $3,000,000.

Colorado—Colorado is following closely in the wake of California by agitating a constitutional amendment authorizing the issuance of $10,000,000 in state bonds for road improvement. Fifty thousand dollars will be available from the motor car license fund, and in addition it is proposed to appropriate $700,000 for expenditure by the state highway commission during 1911-1912. This appropriation, however, has not yet been made. The local revenues of Colorado will probably amount to $1,000,000.

Connecticut—The state appropriation for Connecticut has not yet been made, but probably will amount to something like $2,000,000. Last year the state appropriated $550,000 for trunk line roads and $1,725,061.84 for state-aid roads, making a total of state appropriations for 1910 of $2,275,061.84. In addition to this, the local appropriations amounted to probably an equal sum. These appropriations will not be any less for 1911, and in all probability will be increased. A bill is also pending before the legislature proposing an issuance of $3,000,000 of state bonds, $1,000,000 to be used for the construction of state roads, with the aid of the towns, and $2,000,000 to be used for the construction of trunk line roads by the state, independently of the towns.

Delaware—Delaware has appropriated $30,000, which is to be duplicated by the counties. In addition, the regular county road funds will amount to probably $100,000, and it is proposed to issue $200,000 worth of bonds in New Castle county. Various propositions are before the legislature, looking towards appropriations for constructing state roads, one involving a loan of $750,000 to the state by T. B. Rogers, and another involving a contribution of $1,000,000 toward the construction of state roads by T. C. Dupont. In addition, the local revenues should amount to $100,000.

Florida—No appropriation is made by the state for road purposes in Florida, but $755,000 in bonds are available for expenditure this year by the following counties: Dade, $150,000; Manatee, $250,000; Putnam, $155,000; St. Lucie, $200,000. In addition, the local revenues by counties for road purposes should amount to fully $750,000.

Georgia—In Georgia both state and county convicts are worked on the roads. There are at present 4,618 convicts at work on roads in the state. Very few counties have issued bonds, but Floyd county contemplates the issuance of $200,000 in bonds—and there may be others. The local revenues of counties for the year will amount approximately to $2,500,000. An association was organized on March 31, 1911, at Tifton, Ga., to be known as the Central Route Association of the Journal-Herald national highway. The object of this association is to promote the construction and maintenance of a high-class road along the central route of the proposed national highway from New York to Jacksonville, via Atlanta, Ga.

Idaho—The recent legislature of Idaho appropriated $53,000 from the state treasury for constructing state roads. This will be supplemented by local road funds, which will approximate $500,000.

Illinois—The state of Illinois maintains a state highway department and works convicts in the preparation of road building materials, which are furnished to the various counties f. o. b. the rock crushing plants. The appropriation for the state highway commission was $65,000 in 1910, and there will probably be a like one made for 1911. In addition to this, the local funds by counties and townships will amount to $5,000,000 or more.

Indiana—The state of Indiana contributes in no way towards the road movement. All funds are raised locally by counties and townships, and probably will be not less than $4,500,000 for 1911.

Iowa—The state college at Ames, Ia., is required by law to act as the state highway commission for the state. No money is appropriated from the state treasury for this purpose, the expenses being paid from the general fund of the college. The local road revenues throughout the state for this year will probably amount to $3,500,000.

Kansas—In Kansas $93,356 in bonds have been issued by various counties and townships for expenditures on roads in 1911. In addition to this, the local road revenues of counties and townships will amount to $1,500,000.

Kentucky—The state of Kentucky makes no appropriation for roads, and road bonds are rarely issued by counties. One or two counties are to vote on bond issues, or have voted, but the results are not known. The local road revenues should amount to probably $2,500,000.

Louisiana—The state of Louisiana has a tax of ¼ mill on each dollar of taxable property for road purposes. This yields a fund of $132,354.86. In addition, the surplus revenues of the state fish and game commission are applied to the state road fund, and local revenues will exceed $1,000,000.

Maine—The state-aid appropriation for 1911 is $250,000, and in addition to this, the local road revenues will amount to approximately $2,000,000.

Maryland—Maryland has available for building trunk line roads during this year, $1,050,000, which is derived from the sale of state road bonds, $5,000,000 of which was authorized in recent years. There is available for state-aid in 1911, $200,000, making a total of $1,250,000 from the state, and the local road revenues should amount to $1,000,000, making a total of $2,250,000. In addition, Baltimore county is to vote on a $1,500,000 bond issue this fall.

Massachusetts—Massachusetts makes liberal contribution from its state treasury for highway work. Five hundred thousand dollars already has been appropriated by the legislature for construction work, the appropriation for maintenance not having yet been made, but it will probably amount to $200,000. The net proceeds from motor car licenses also are applied to highway purposes, and this will amount to something over $300,000. In addition, the local revenues should amount to $2,500,000.

Michigan—The state of Michigan aids

Million Dollars a Day for Highways

in the construction of roads through a system of state rewards. One hundred and fifty thousand dollars is appropriated a year for this purpose. A law was passed recently, authorizing counties to organize road work under the county system, and to issue bonds. Some counties are agitating the question of bond issues under this new law, and Wayne county has voted to issue $2,000,000. In addition to this, the local revenues should amount to $3,500,000.

Minnesota—In 1910 Minnesota appropriated from the state treasury $115,000 for state-aid. The appropriation for 1911 has not yet been made, but it can be assumed that it will not be less than the 1910 appropriation, and most likely considerably more. In addition, the local road revenues in Minnesota should exceed $2,000,000.

Missouri—The state road revenues will amount approximately to $300,000. This fund is derived from a stamp tax and dram shop tax. In addition to this, the various counties are agitating bond issues and the local road revenues should amount to $2,500,000.

Mississippi—No state-aid is given by Mississippi. Lauderdale county recently issued $200,000 in bonds. The local revenues should amount to approximately $2,000,000.

Montana—No state appropriation is made in Montana for roads. The local revenues should amount to $500,000.

Nebraska—No money is appropriated by the state of Nebraska for road work, this matter being left entirely to the counties and subdivisions thereof. The local road revenues should exceed $1,000,000.

Nevada—No funds are appropriated by the state for road work in Nevada, and the local road funds amount to scarcely more than $50,000.

New Hampshire—For 1911 the legislature of New Hampshire has appropriated $125,000 for state-aid, and $250,000 for constructing trunk line roads, the state paying all the cost. In addition, the local road revenues throughout the state should amount to over $1,000,000.

New Jersey—New Jersey is the pioneer state of the union in participation in the work of road improvement. Its first state-aid law was adopted in 1892. The appropriation by the state for work during 1911 has not yet been made, but in 1910 $300,000 was so appropriated, and this amount will, no doubt, be considerably increased in the appropriation for this year. In addition, a bill has been pending before the legislature to authorize counties to issue bonds for road purposes. The local revenues from taxes, etc., should amount to $3,500,000.

New Mexico—A tax of 1 mill is levied for road purposes, and this yields a fund of about $100,000. In addition to this, the territory furnishes convicts to work on certain specified roads, and also the local revenues should amount to $200,000.

New York—The state of New York is spending more money on roads than any other state in the union. A few years ago $50,000,000 in bonds were issued for this purpose, and each year the legislature makes large direct appropriations from the state treasury. The appropriation for 1911 has not yet been made, but in 1910 $2,500,000 was appropriated for state-aid, and $2,500,000 for trunk line roads, the total cost of which was paid by the state. In addition to this the local road revenues by counties should exceed $7,000,000.

North Carolina—North Carolina only appropriates $5,000 from the state treasury for road purposes, which amount is expended under the state geologist for advice and engineering assistance. Quite a number of counties, however, have issued bonds and voted special road taxes for improving their roads. There have been either issued or contemplated $4,609,000 to date this year, and various other counties and townships are agitating the question. In addition to this, a large fund is raised by the regular county and local revenues, which should amount to as much as $2,000,000.

North Carolina has projected several important highways, traversing the length and breadth of the state, for road improvement. One of these, known as the central highway, is to run from Moorehead City on the Atlantic ocean to Paint Rock, or to some point on the Tennessee line. The route of this road is now being surveyed, and it is expected that work will be commenced in the near future. In 1910 $2,088,000 worth of bonds was issued, and other road taxes amounted to $829,898.28, or a total of $2,917,898.28 for 1910.

North Dakota—Very little is being done in North Dakota. No state appropriation is made, but the legislature in 1909 created a good roads experiment station at Bismarck for the purpose of making experiments and investigations to determine the most economical and practical methods of road improvement for North Dakota. The local revenues, however, should amount to $1,000,000 for this year.

Ohio—From April 1 to December 1, 1910, thirty counties in Ohio issued bonds to the amount of $2,606,356, and during the same period fifty-six other counties of the state expended $1,727,056, or a total of $4,333,412. The state appropriation for 1911 has not yet been made, but in 1910 this appropriation was $476,500. The local road revenues should amount to $6,000,000 additional. Various counties are to vote on bond issues, but as yet no definite information is available.

Oklahoma—The state of Oklahoma is spending about $1,000,000 on its roads.

Oregon—The state of Oregon makes no appropriation from the state treasury for state roads. There will be probably $2,000,000 raised from local taxes for this year.

Pennsylvania—Pennsylvania has not as yet made its appropriation for 1911. The state, however, appropriated $1,000,000 for state-aid in 1910. A bond issue of $50,000,000 for the state is being agitated, and the local revenues should amount to $7,500,000.

Rhode Island—Rhode Island has not as yet made its appropriation for 1911, but $300,000 was appropriated in 1910, and this amount will most likely be increased during this year. The local revenues of Rhode Island should amount to $500,000.

South Carolina—No state appropriation is made in South Carolina. Marion county recently has issued $100,000 in bonds. The local road revenues for the state should amount to $1,000,000.

South Dakota—South Dakota makes no appropriation from the state treasury for roads. The road revenues from local taxation should amount to $500,000 each year.

Tennessee—Nothing is appropriated by the state in Tennessee for road purposes. There have been issued, however, for expenditure this year $1,400,000 in bonds, and the local road revenues from other sources should amount to $2,500,000.

Texas—While Texas makes no state appropriation for roads, yet large funds are raised locally. Approximately $1,600,000 in bonds have been voted by various counties already this year, and the local road revenues from other sources should be about $6,000,000.

Utah—Utah has not as yet made its appropriation for 1911, but $27,000 was appropriated in 1910. Not less than this amount may be expected for 1911. In addition, the local road revenues should exceed $500,000.

Vermont—The legislature of Vermont has appropriated $150,000 for state-aid from the state treasury during 1911. A state bond issue is also being agitated for the purpose of constructing trunk line roads. The local road revenues should amount to $1,000,000.

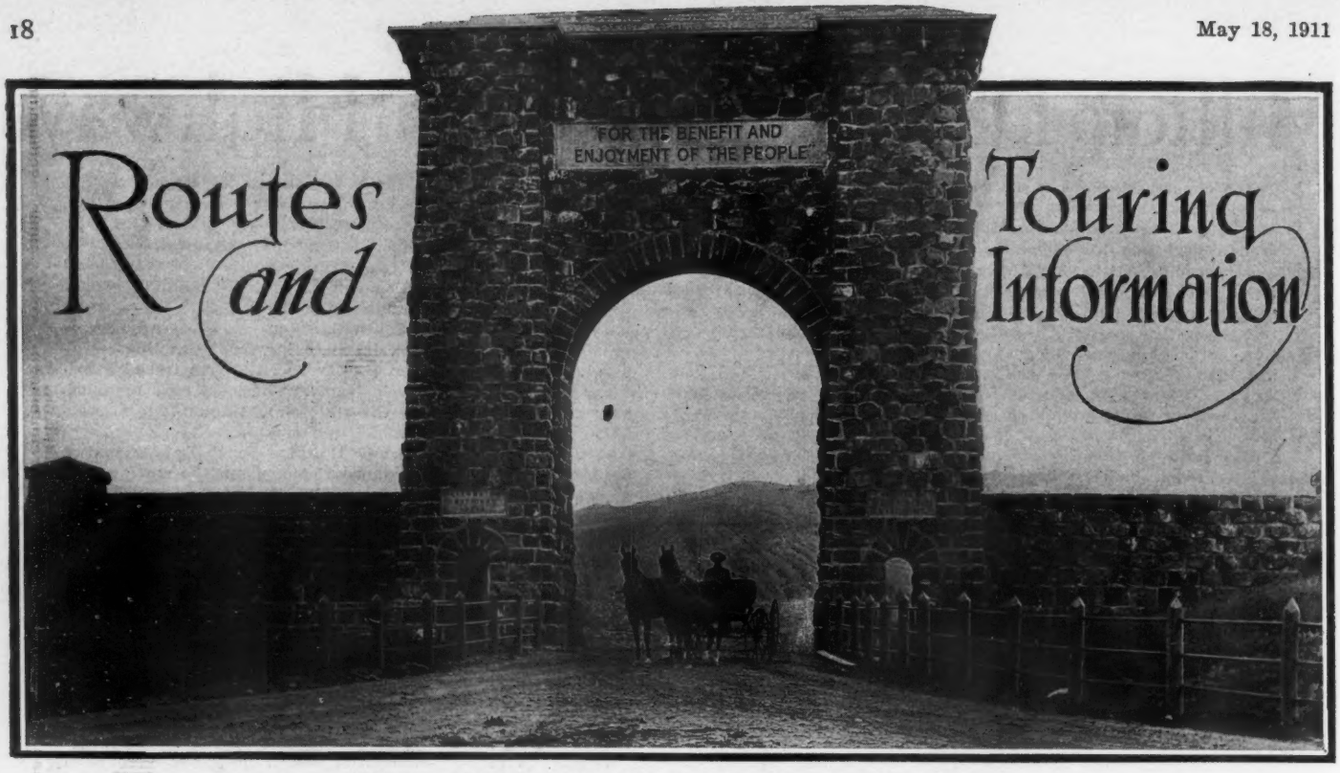
Virginia—In Virginia there is available from the state appropriation $250,000, and in addition, both state and county convicts are worked on the roads. Several counties have issued bonds in large amounts. Wise county, $700,000; Tazewell, $625,000; Lee, $364,000; and other counties to a total of $2,454,000. Staunton county is also to vote on an issue of $1,000,000, which would make a total of $3,454,000 in bonds. In addition to this, the local road revenues should amount to $1,000,000.

Washington—In the state of Washington the local road revenues should amount to $2,000,000.

West Virginia—The local road revenues in the state of West Virginia should amount to $1,500,000.

Wisconsin—In Wisconsin there is available from the state appropriation $390,000, $350,000 of which is to be used for state-aid purposes, and $40,000 for engineering and administrative purposes. The local revenues should amount to $3,000,000.

Wyoming—No state funds are available in Wyoming, but the local road revenues should amount to $500,000.

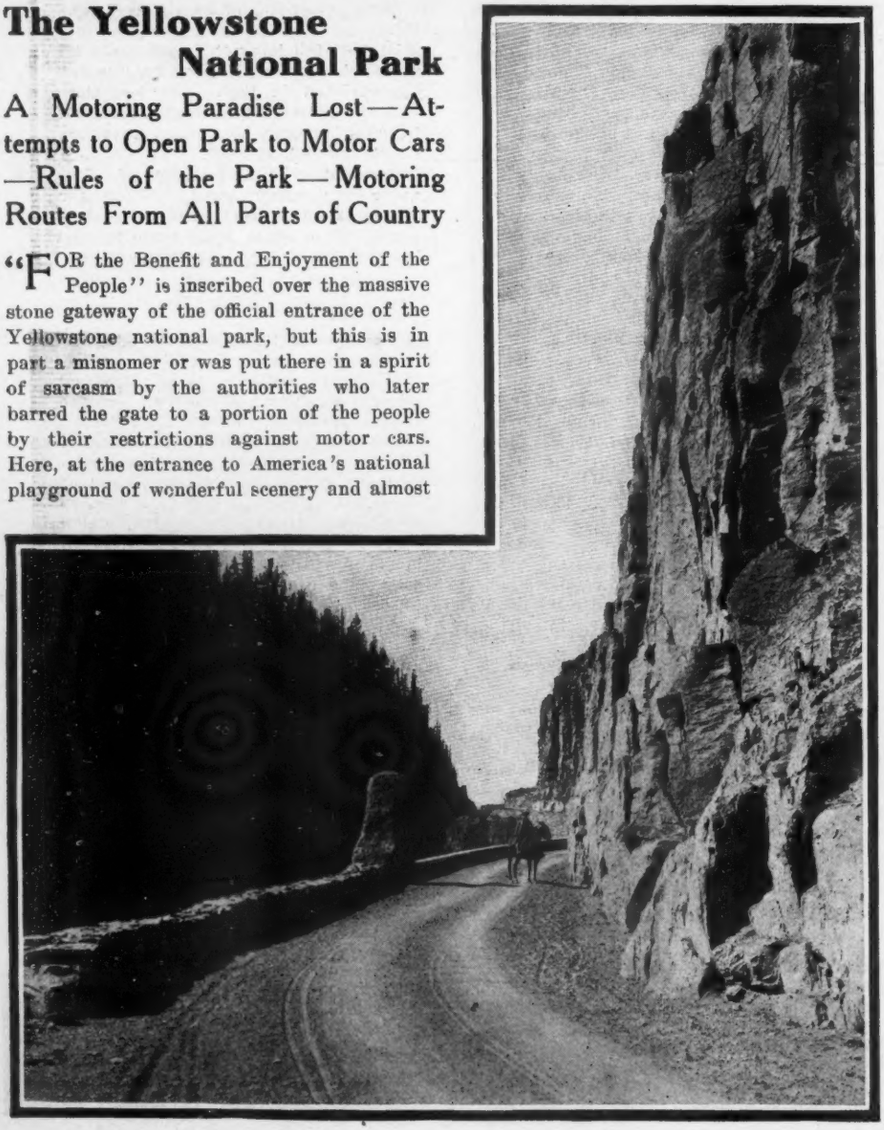


OFFICIAL ENTRANCE TO THE YELLOWSTONE NATIONAL PARK

The Yellowstone National Park

A Motoring Paradise Lost—Attempts to Open Park to Motor Cars—Rules of the Park—Motoring Routes From All Parts of Country

"FOR the Benefit and Enjoyment of the People" is inscribed over the massive stone gateway of the official entrance of the Yellowstone national park, but this is in part a misnomer or was put there in a spirit of sarcasm by the authorities who later barred the gate to a portion of the people by their restrictions against motor cars. Here, at the entrance to America's national playground of wonderful scenery and almost perfect roadways the motor conveyance which has brought its passengers for thousands of miles over mountains and rivers must be parked while the tourists perforce patronize one of the transportation or camping companies licensed to traffic in the natural beauties of this wonderland.



RULES OF YELLOWSTONE NATIONAL PARK

Motor Age has received many inquiries relative to the Yellowstone park and the possibility of using motor cars in it. The Yellowstone national park is open to visitors from June 15 to Sept. 15, inclusive. The department of the interior, which controls this reservation, positively forbids motor cars within the confines of the park and this regulation is strictly enforced. Bicycles are allowed but the regulations state that on meeting a team the rider must stop and stand by the side of the road between the bicycle and the team. Fishing is allowed in the park with line and hook only, and a limit of twenty fish per day is imposed. Hunting or killing of animals is strictly forbidden except to protect life. Riding or driving upon any of the geysers or hot springs formation is forbidden, as also is the injury or disfiguring of the natural formation in the park.

Every year an increasing number of motorists make the trip to the park and were cars allowed to enter, the visits of such tourists would be much more frequent. Attempts have been made to accomplish this result but they have received scant attention at the hands of those who have the park in charge. Even so important a body as the state senate of Wyoming addressed a memorial to former Secretary of the Interior Ballinger requesting that the park be opened

TO THE YELLOWSTONE PARK.

VIA GARDINER, MONT., THE OFFICIAL OR NORTHERN ENTRANCE

Leaving Cheyenne travel north through Goldsmith, Wheatland, Foxton, Douglass, Casper, Mokoma, Moneta, Thermopolis. Here you should branch off north, following the C., B. & Q. railroad tracks through Basin to Billings, Mont. From Billings to Gardiner, Mont., the northern and official entrance to the park, the following applies: Leave Billings on the south side of the Northern Pacific railroad tracks, going through the towns of Laurel, Park City, Columbus, and Merrill; then follow the old trail from Merrill through Dead Man's Canyon to Big Timber; straight west on the south side of the Northern Pacific tracks to Springdale; continue on the south side of the railroad to Livingston, then south to Gardiner.

VIA CODY, WYO., THE EASTERN ENTRANCE

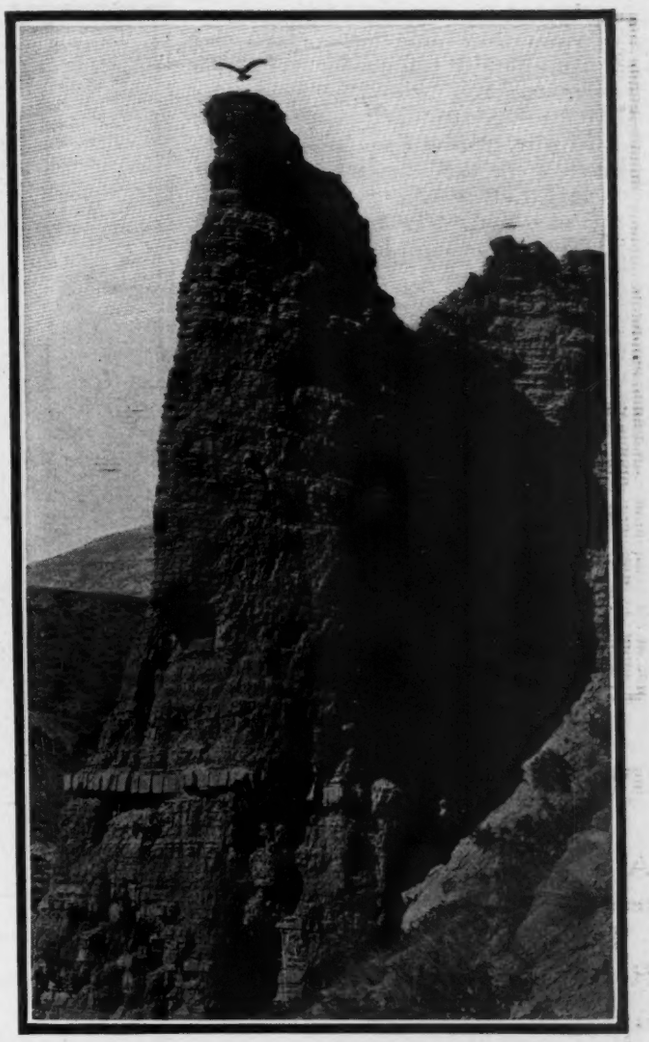
Follow the route as outlined to the northern entrance as far as Thermopolis, then branch off to Ilo, thence through Dickie, Meeteetse, Wiley, Cody, and Owart to the park.

VIA THE SOUTHERN ENTRANCE

Follow the route outlined to Cheyenne; thence through Ozone, Laramie, Lookout, Como, Fort Fred Steele, Rawlins, Pinor, Bitter Creek, Thayer, Rock Springs; thence through Eden Valley, Pacific Springs, South Pass, Atlantic City, Lander, Fort Washakie, Dubois; from this point follow the Wind river road to Jackson lake, thence to the park.

to motor travel. In reply to this memorial, asking that the restrictions which bar tourists from the park unless they first negotiate terms with those to whom the secretary had granted concessions be removed, he said in part that the roads were too dangerous to permit motor cars to use them. Those who know the road conditions at the park charitably assume that the secretary was misinformed, and the photographs on these pages seem to bear them out.

The Yellowstone national park may be reached through either of the three entrances, and the routes to them from different points are outlined in the following pages in response to the many inquiries for motor toursto the park. Motor Age is indebted for information as to the routes and road conditions to the following: I. D. Corvell, Belle Fourche, S. D.; D. D. Hurd Co., Sheridan, Wyo.; Garden City Garage, Missoula, Mont.; Western Auto Transit Co., Rock Springs, Wyo.; R. L. Baker, Billings. Mont.: Swendeman Automobile Co., Helena, Mont.; Baker & Garrett, Thermopolis, Wyo.



EAGLE NEST ROCK

BIRD'S-EYE VIEW OF YELLOWSTONE NATIONAL PARK FROM NORTHERN ENTRANCE

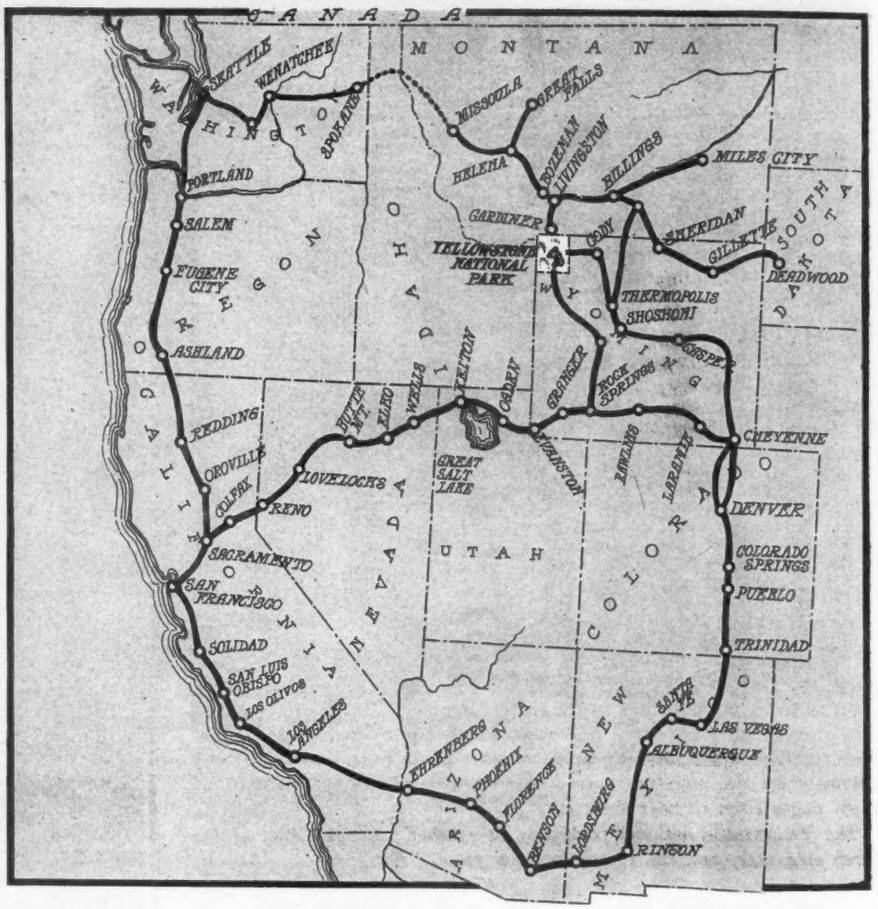
NEBRASKA TO THE YELLOWSTONE

Jackson, Neb.—Editor Motor Age—The writer wishes to take a long tour in the spring, touching the following points: Sheridan, Thermopolis, Yellowstone park, Miles City, Bozeman and Helena, Mont., thence home to the northeast corner of Nebraska. Will Motor Age give me the best route, how the roads will be and if it thinks it can be negotiated by five passengers with touring equipment?—Reader.

From Jackson, Neb., Motor Age suggests that you go to Sioux City, Ia., thence to Omaha by way of Salix, Sloan, Whitney, Onawa, River Sioux, Missouri Valley, Crescent, Council Bluffs, Omaha. For a route from this point to Cheyenne you are referred to the map and communication which appeared in Motor Age, issue March 23, page 22. From Cheyenne to the Yellowstone park, see the routes outlined, together with map, in this issue, page 17.

A side trip from Billings to Miles City will have to be made, directions covering same are: Leave Billings for Miles City, passing through Huntley on the north side of the Yellowstone river, cross at Huntley to the south side, thence to Pompey's Pillar over Bull Mountain to Custer, cross the river to the north side at Custer, follow the old Custer trail to Forsythe. Keeping on the north side of the river follow the traveled road into Miles City. The only bad portion to be found on this trip is from Huntley to Pompey's Pillar. Here will be encountered some low lands and marshes and it would not be recommended in bad weather. Accommodations can be had in any of the towns along the route.

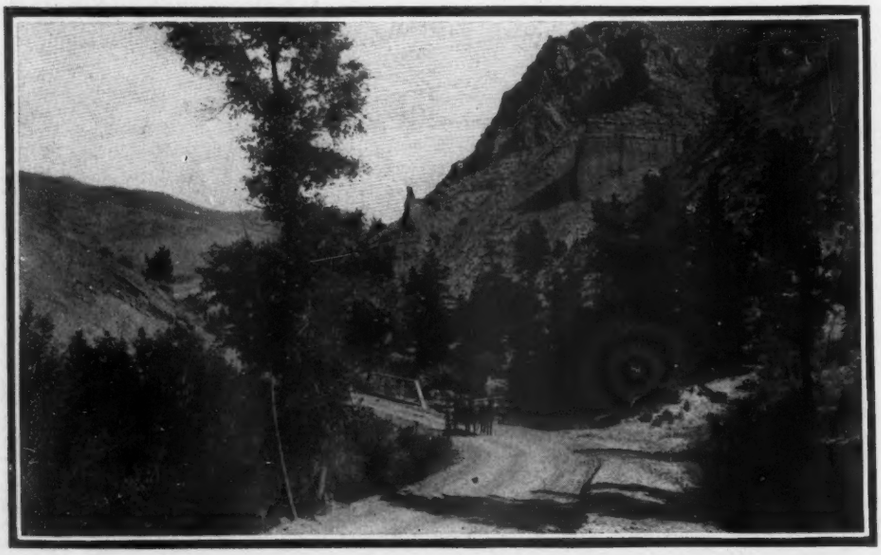
Returning from Helena, Mont., by way of Billings to Sheridan, Wyo., Motor Age suggests that, in order to make the return trip through the northern part of Nebraska, you go to Deadwood, S. D., via Gilette, Moorcroft, Sundance and Belle Fourche; thence south along the C. and N. W. tracks to Dakota Junction (Neb.), on through Chadron, following the railroad's right of way to O'Neil; along the Great Northern railroad to Plainview, continuing east to Osmond and Randolph, northeast to Coleridge, thence east to Martinsburg and Jackson. This route takes you along the northern portion of Nebraska, practically across the state. However, you will encounter on this route many miles of heavy going through deep sand.



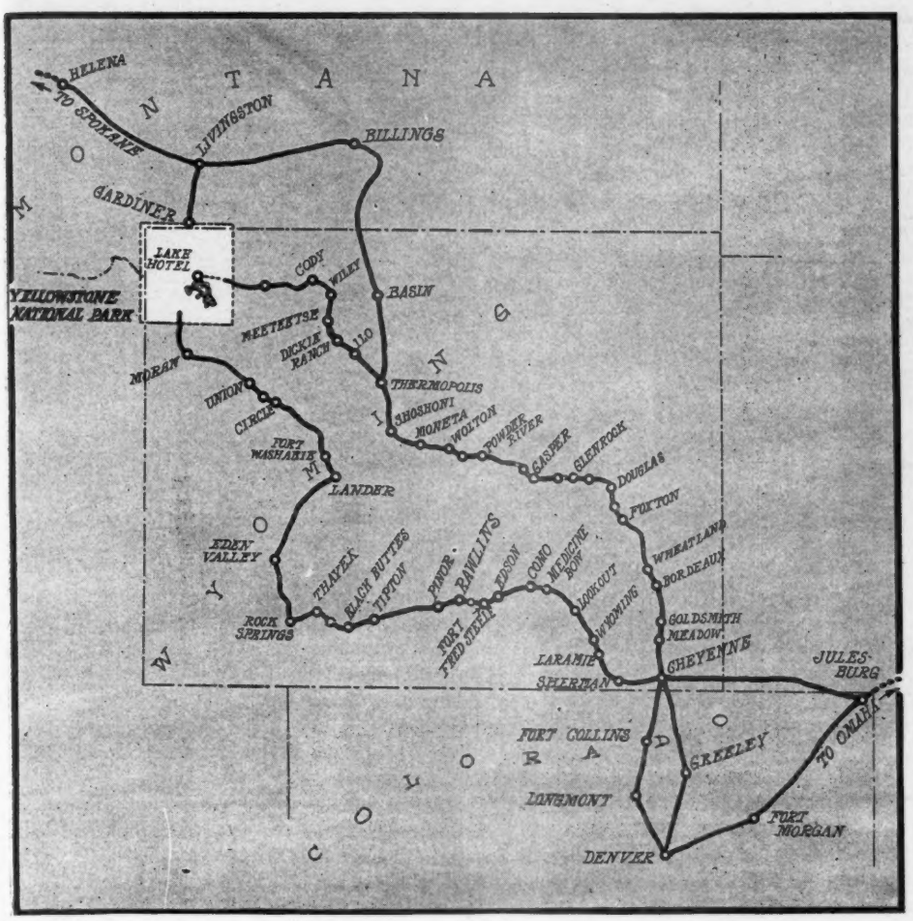
TOURING ROUTES TO THE YELLOWSTONE NATIONAL PARK FROM THE COAST

An alternate route from Deadwood, eliminating some of the heavy going in northern Nebraska, would be through Rapid City, then following the C., M. and St. P. railroad tracks through Caputa, Farmingdale, Creston, Scenic, Imlay, Konata, Interior, Weda, Kadoka, Belvidere, Stamphord, Okaton and Mackenzie, Presho, Reliance, Oacoma, crossing the Missouri river at Chamberlain by ferry; continue east along the right of way of the St. Paul railroad through Pukwana and Kimball. In following the railroad you always are able to keep in close touch with the towns, which is advisable in a new country, such as this. Before leaving Kimball inquire as to the route to take south from Platte, S. D., from which point follow the St. Paul railway tracks to Bloomington, Geddes, Lake Andes, Wagner, Avon, thence south through Loretto to Perkins and Running Water, where a ferry can be secured to cross the Missouri river into Nebraska.

Motor Age has been informed that it would not be advisable for you, in making the trip from Deadwood, to attempt to cross into Nebraska west of Running Water, because that portion of South Dakota to Chamberlain has been settled only lately and the roads away from the railroad are too uncertain to attempt. Furthermore, the railroad right of way follows the easiest grade through that section. Keep to the north of the railroad as there is considerable gumbo along the White river, which lies to the south of the railroad. You will encounter some hilly country



FORMER SECRETARY BALLINGER SAYS THESE ROADS ARE DANGEROUS TO CARS



HOW TO REACH THE THREE ENTRANCES OF THE YELLOWSTONE NATIONAL PARK

going into Oacoma, but after leaving Chamberlain there are good roads all the way to Jackson.

Leaving Running Water go south to Verdigris. From this point you can go straight east 24 miles to Bloomfield and continue east 18 miles to Hartington, thence southeast along the C., M. and St. Paul tracks to Coleridge, 18 miles east to Martinsburg, and east to Jackson. This would give you the most northern good roads route in Nebraska.

A better route, however, from Verdigris over good rolling prairie, free from sand, is south to Creighton, thence to Plainview; east to Osmond and Randolph, and from Randolph northeast to Coleridge and on east to Martinsburg and Jackson.

CONDITIONS AT YELLOWSTONE PARK

Cedar Rapids, Ia.—Editor Motor Age—I desire information in reference to a motor tour from the Black Hills to the Yellowstone park and from there to Los Angeles, Cal. I desire to know:

1—Is there a fairly good road from the Black Hills, Deadwood or any other location to the Yellowstone park, and if so, what is the route?

2—Are motor cars allowed in Yellowstone park, and is any permit or other proceedings necessary before entering the park with a motor car?

3—How early in the season is the park open, and how early in the season is it fairly warm in the park, so as to make comfortable touring?

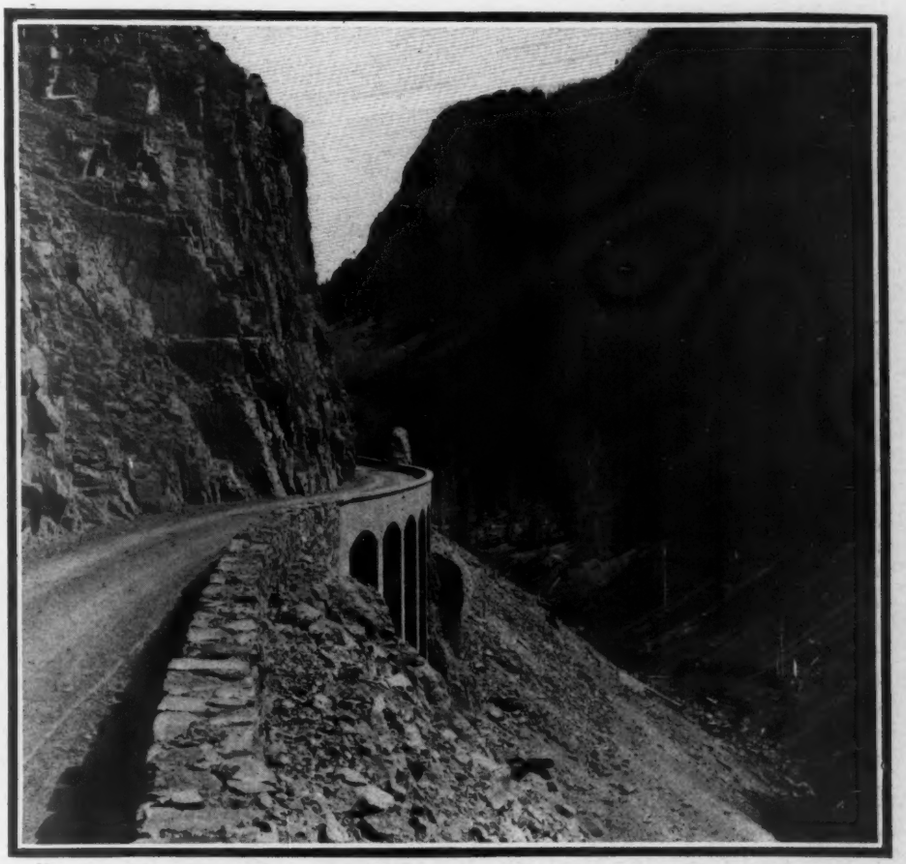
4—Is there a fairly good road from the Yellowstone park south through interesting country, through Colorado or Utah, and Arizona, to Los Angeles? If so, what is the route?—C. L. Bartlett.

1—A route from Deadwood, S. D., to the Yellowstone park is through Belle Fourche, S. D., thence to Sundance via the Sundance hill road, on through Moorcroft, Wyo., and Gilette to Sheridan. Gasoline can be secured at all of those towns. As it is impossible to go across the mountains from Sheridan and enter the park at Cody, the eastern entrance, you will have to go from Sheridan and follow the railroad tracks to Billings, Mont., and thence to Gardiner, the northern entrance, a route covering which is outlined on page 19.

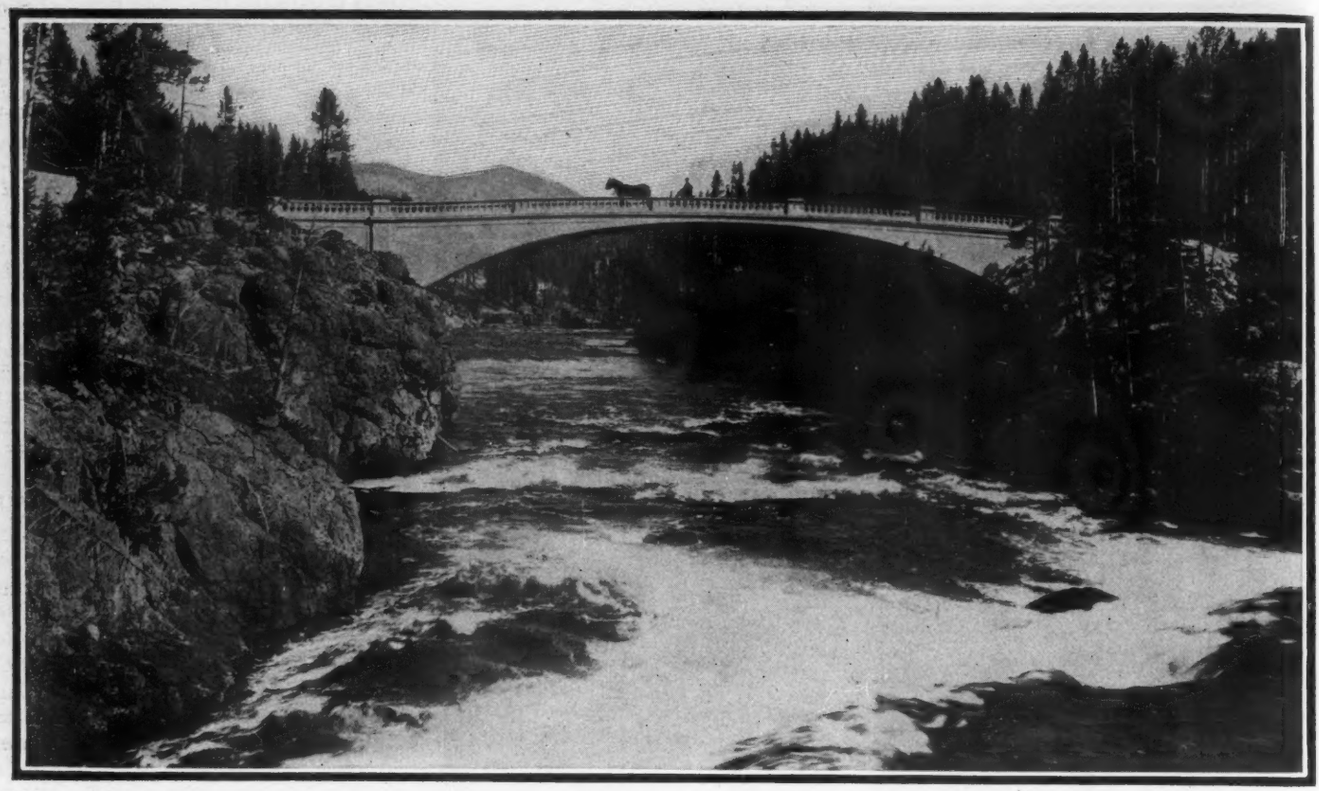
2—Cars are not allowed in the park.

3—June 15 to September 15. It will be found rather cool early in the season, as well as late in the season, and at all times it is well to be provided with warm clothing, which will be needed mornings and evenings.

4—For a route south from the park it will be necessary for you to return to Billings, thence to Thermopolis and Cheyenne—route outlined in the map—then west through Laramie, Rawlins, Bitter Creek, Rock Springs, Granger, Evanston, Ogden, Kelton, Wells, Battle Mountain, Lovelocks, Reno, Truckee, Colfax, Sacramento, San Francisco, San Mateo, Redwood, San Jose, San Juan, Salinas, San Miguel, San Luis



GOLDEN GATE ROAD WITH PROTECTING WALLS: NOW BARRED TO MOTORISTS.



CANYON BRIDGE ACROSS THE YELLOWSTONE RIVER

Obispo, Las Olivos, Santa Barbara, Casitas, Calabasas, Los Angeles.

For a route to Los Angeles which will take you through the southern portion of Arizona, from Cheyenne, Wyo., through Denver, Colo., see the map and communication on pages 22 and 23 of Motor Age, issue March 23.

YELLOWSTONE PARK AND COAST

Grand Rapids, Mich.—Editor Motor Age—I am planning a tour of the western states by motor car early in June, and should like any information Motor Age can give me concerning the condition of the roads from Denver to Yellowstone park, and from Yellowstone park to San Francisco. I should like, also, to know if there are any special rulings in regard to touring in Yellowstone park, and if so, what they are.—Earl Wilson.

Your inquiry for a route to the Yellowstone park is answered in the three route directions on page 19 of this issue.

If you enter the park at the northern entrance—and it must be remembered that the exit will have to be made by the same route in order to get your car, which is garaged outside the park—Motor Age suggests that you go to Seattle as outlined on page 22 of this issue. Then take the coast trip down to San Francisco as mapped and outlined in Motor Age, issue March 23, pages 22 and 23. This, of course, will make a long trip to San Francisco, possibly longer than you wish. A shorter route, therefore, would be to enter the park at the eastern or southern entrance. On leaving the park return to Cheyenne, thence to Rock Springs—if you go to the eastern entrance; or return to Rock Springs if you enter the park on the south. Leaving Rock Springs and starting on your journey towards San Francisco, go to Granger, Evanston, Ogden, Kelton, Battle Mountain, Lovelocks, Reno, Truckee, Colfax, Sacramento, San Francisco.

If you do not object to a southern route in midsummer, you will find such a route outlined and illustrated with a map diagram in Motor Age, issue March 23, pages 22 and 23. During the touring season the roads in the western country are generally in good condition, but wherever possible keep in sight of the railroad tracks.

As to the regulations of the Yellowstone park, you will find complete information on page 16 of this issue.

DENVER TO GREAT FALLS, MONT.

Wichita, Kan.—Editor Motor Age—Kindly advise me as to the best motor route from Denver, Colo., to Great Falls, Mont., giving the road conditions.—Tourist.

You are referred to the route outlined in the communication covering a Denver-Seattle route, also the map on page 20, showing the route to the Yellowstone park and the northwest. From Helena to Great Falls, Mont., you will find excellent roads as well as picturesque scenery, and aside from what is called the Bird Tail divide on one road and Sullivan hill on another the trip will not be found difficult. The distance is 110 miles.

Another route, approximately 140 miles in length, and which avoids the divide and Sullivan hill, is through Augusta. Motor Age suggests that for complete running directions you call on the Swendeman Automobile Co., 415 Fuller avenue, Helena, which has kindly furnished information on touring in Montana.

DENVER-SEATTLE ROUTE

Chicago—Editor Motor Age—Kindly give me a good route from Denver, Colo., to Seattle, Wash., through Sheridan, Wyo., and Helena, Mont.—Edward F. Hahn.

The route that is generally taken by motorists from the middle west to the northwest is via Denver to Cheyenne, thence to Rawlins, Granger, Pocatella, Twin Falls, Boise, Baker City, Walla Walla, Prosser, Ellensburg, Snoqualmie Pass and Seattle. However, as you desire to motor by way of Sheridan, Motor Age suggests the route outlined to the northern entrance of the Yellowstone park. If you do not care to make a side trip of the park, then at Livingston—instead of going south to Gardiner for the park—keep straight west, going over Bozeman tunnel, thence to Bozeman. The Commercial Club of Bozeman has established fully equipped camps at convenient points for those who desire to spend a little time in that part of the country where there is good hunting.

In leaving the town of Bozeman go northwest to Belgrade, Central Park, Manhattan, to Logan. Do not go into Three Forks, but keep to the right of Three Forks river, thence to Lombard, then on over a mountainous country north to Townsend; going north to Winston, then into Helena. This trip from Billings to Helena, Mont., has been made in two days.

Continuing on to Missoula, over good

roads practically all the way, the route is north from Helena, going over the main chain of the Rocky mountains at Lincoln; from Lincoln follow the Blackfoot river and at Bonner, which is only a short distance from Missoula, you will again strike the Northern Pacific railroad which is followed to Missoula, where you will have to ship your car over the divide to Spokane, Wash. Eventually this portion of the route will be opened to motorists, but at the present time it is impassable.

According to the Washington state tour book the trip from Spokane to Seattle is still one fraught with some difficulty, but eventually will be a fine motor route. Leaving Spokane you will pass through Medical Lake, Reardon, Davenport, Fellows, Creston, Wilbur, Gooan, Almira, Hartline, Coulee City, Douglas, Orondo, Wenatchee, Malaga. Going over the Wenatchee mountains to Ellensburg the roads are anything but good, in places nothing but a mere trail, and an altitude of 5,000 feet is attained. From Ellensburg proceed to Cle Elum. At this point motorists generally ship their cars either to Snoqualmie Falls or Seattle. If the car is shipped to Snoqualmie Falls, the route into Seattle is through Fall City, Issaquah, Renton, Rnerton, Georgetown, Seattle. For complete running directions through Washington you are referred to the Washington state tour book compiled by G. F. Beck, Seattle, Wash. It would be well for you to carry block and tackle, shovel and plenty of rope and other devices for use in bad places. A light car would make the trip much easier than a heavy one.

According to the best information at hand, if you desire to visit Sheridan, Wyo., this will have to be made a side trip from Billings, following the C., B. and Q. railroad from Billings to Sheridan, there being no short cut across the mountains from Cody to Sheridan.

Ample repair facilities will be found in all of the towns in Montana and Wyoming, and if you are not afraid of a few hills, motoring in the northwest states will be found a most enjoyable sport.

DENVER TO SAN FRANCISCO VIA PARK

Wynnewood, Okla.—Editor Motor Age—I expect to drive my touring car to San Francisco via Denver, Yellowstone park, etc., about May 15 or June 1, and am advised that Motor Age could help me out as to a route, best roads, etc. I have the route from here to Denver, Colo., and want information on a route from Denver to San Francisco via the Yellowstone park. I would like a list of the towns passed through, also a map diagram, if possible. What is the date of the opening of the Yellowstone park?—J. W. Shelton.

Your question for a route to the park is answered by the map and route directions on page 19 of this department. If you enter by the northern entrance, see information contained in the communication headed Denver-Seattle route. For the balance of the route Seattle to San Francisco, see Motor Age, issue March 23, pages 22 and 23. Should you prefer a shorter route to San Francisco, return to Cheyenne, Wyo., thence go west to Laramie and Rawlins, on to Bitter Creek, Rock Springs, Granger, Evanston, Ogden, Kelton, Wells, Battle Mountain, Lovelocks, Reno, Truckee, Colfax, Sacramento, San Francisco.

For a route from Denver to Cheyenne, if you desire the mountain trip, travel via Longmont, Berthoud, Loveland, Fort Collins, Wellington, Cheyenne. An alternate via Greeley is through Henderson, Brighton, Greeley, Eaton, Pierce, Dover, Carr, Cheyenne.

There are motor clubs in all of the larger towns in Wyoming and Montana, as well as in the other northwest states and on the coast, and should the motorist want more specific running directions, such information may be obtained at the clubs throughout this portion of the country.

TOURING REGULATIONS IN WEST

Chicago—Editor Motor Age—What are the touring regulations in the western states one passes through en route from Denver, Colo., to the Yellowstone park and on to the coast?—C. F.

In the states of Colorado, Wyoming, Montana, Idaho, Nevada, and New Mexico there are no state laws governing motor car operation.

In Washington, Utah, and California nonresidents are exempt; in Oregon tourists are exempt 30 days. In all of these states, however, the home state license tag must be displayed. For specific information regarding interstate touring regulations see Motor Age, April 27 issue.

SOME OF THE ROADS AND SCENERY IN THE YELLOWSTONE NATIONAL PARK—SWAN LAKE VALLEY

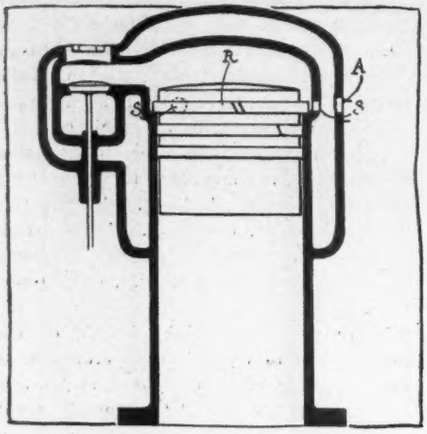


FIG. 1—REMOVING STUCK PISTON

REMOVING STUCK PISTON

YATES, MO.—Editor Motor Age—Will Motor Age advise me through the Clearing House columns the means used to remove a piston ring that has expanded in the explosion chamber of a cylinder?—Amateur.

The removal of a piston which has been pushed too far into the cylinder always is a difficult proposition. If the motor is of the valve-in-the-head type, the piston often can be removed after a number of trials in the following way:

Remove both valve cages from the head of the cylinder, take two tools, like screwdrivers, put one through each cage hole, catch the ring on each side of the gap, compress the ring and draw the piston.

With other cylinders the conditions are usually as shown in Fig. 1. The bottom edges of the top ring R rest against the shoulder of the counterbore all around the circumference. If a hole ½-inch in diameter were drilled through the waterjacket at A, so a piece of wire or flexible flat steel, such as used in steel measuring tape, could be slipped around the ring, the latter could be pulled together and the piston removed; or if three holes were drilled about 120 degrees apart pressure could be brought to bear upon the ring in this way enough to close the ring so that the piston could be removed.

After the piston is removed the holes could be carefully tapped and plugged, and with a little paste made of litharge and glycerine applied to the plugs before they were screwed in place, the cylinder would be again ready for use. To facilitate manipulation of the piston rings and the fitting of the plugs, it is better to make the hole A penetrating the outside wall of the waterjacket about ¾ of an inch in diameter and the inner hole S about ½-inch in diameter.

TYPES OF CONTROLLERS

Nashville, Tenn.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly tell me what is the difference between the Perfection controller made by the Durant company, of Milwaukee, Wis., and the F. B. automatic clutch releaser made by the F. B. Co., Columbia, S. C.? What in the opinion of Motor Age is the better to use on a 1909 model 10 Buick?—M. E. Gropp.

The F. B. automatic clutch releaser is illustrated in the upper part of Fig. 2, while the Durant company's device is shown in the lower portion of the illustration. Motor Age never has seen a comparative test of these contrivances, so it is not in a position to report upon their comparative efficiency.

HINTS FOR MOTORISTS

Marshall, Minn.—Editor Motor Age—Here are a few hints which possibly might be of use to my fellow motorists:

The binding post on the zinc of a dry cell often breaks off. Do not throw the cell away. Crowd the end of a copper wire denuded of its insulating material down some 4 inches between the pasteboard cover and the metal of the cell and connect to the next carbon post.

If one cylinder persistently misses fire do not let that cylinder retard the action of the rest. Remove the spark plug so there will be no compression in that cylinder and run home on the balance of the motor.

By inserting a small tube into the exhaust pipe in such a manner that small jets of hot gases will be discharged against the intake manifold just above the carbureter, the explosive mixture will be greatly improved.

A very convenient device to save the rim when a casing gives out and you are compelled to come home without a tire can be made of two thick leather straps the width of the channel, and a piece of rubber belting the width of the rim, all riveted together in such a manner that when placed around the wheels the straps will occupy the channel, and the belting will project over the edges of the rim to protect it from stones and gravel wear. The ends of this extemporaneous tire may be held together by the halves of an ordinary hinge riveted to the ends and when in use held together by a wire nail in place of the original rivet, with the end of the nail bent over with the pliers to retain it in place. I have used two of these come home tires on my rear wheels for a 22-mile run and they served me well.

The reason that large tires will wear longer than small ones may be easily understood by knowing that each point on the circumference of a 30-inch tire will touch the ground 696¼ times in running 1 mile, while each piont of a 36-inch tire will touch the ground only 581 times. The large tire will thus wear almost one-fifth longer than the small tire.—A. D. Hard.

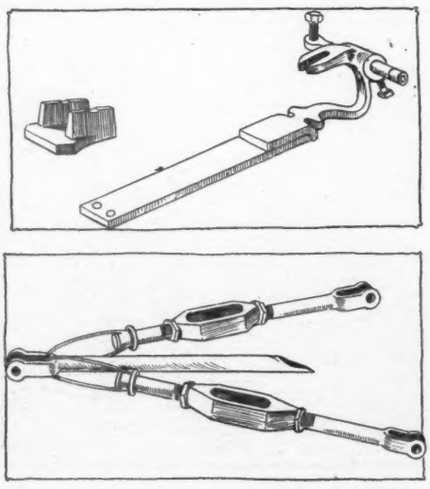


FIG. 2—CLUTCH RELEASING DEVICES

The Readers'

EDITOR'S NOTE—To the Readers of the Clearing House Columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

DISCUSSES INSURANCE

Chicago—Editor Motor Age—As an owner of motor cars, I have become interested in the different forms of insurance which are offered for the protection of owners. I have carried insurance of this kind for the last 5 years. I have two cars of about 40 horsepower each, and I find that in order to protect myself fully it will cost me between $250 to $300 for each car, making between $500 and $600 a year carrying $2,000 on one car and $4,000 on the other.

It seems to me that this amount is excessive. Before I owned motor cars I drove horse vehicles for probably 25 years and never carried insurance of any kind. I always have felt that a properly driven motor car carried with it no more danger than a properly driven team of horses, and it seems to me that the $500 or $600 demanded for the protection of the motor car owner is entirely out of proportion to the very low insurance rate which can be secured by the owner of a horse-driven vehicle.

In looking into this matter I find that in England a much more complete protection is offered at about one-half the insurance rate that is offered in this country. For instance, the Motor Union Insurance Company will provide for $100 unlimited idemnity for personal injury and to property, damage to your own car, protection against fire, explosion, theft, damage in transit either on land or sea, and medical expenses for personal injuries sustained in accidents up to $50. In addition, 20 per cent discount is allowed on renewing the policy, provided no claim has been

Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

made during the year. In other words, I could obtain in England for $220 complete protection for my two cars, and I am asked to pay in this country between $500 and $600.

I believe that it would be in the interest of motor car owners if an influential journal like Motor Age would take this matter up and discuss it thoroughly in its columns.

I have done quite a bit of motoring in Great Britain and I feel confident that the motor car owner runs as much risk there as here, and I should like to be shown by a full discussion of this subject why the American motor car owner should be charged double the insurance rate charged in Great Britain.

There are only two alternatives to the situation: First, either this rate is excessive, or, second, if the rate is just and in keeping with the risks incurred in motoring, then we certainly are in need of more stringent laws and more stringent regulations which will reduce the motor car risk to somewhere near the risks incurred by the old-time horse-driven vehicles. To my mind the subject is a very important one and deserves to be gone over very thoroughly—Arthur Dean Bevan, M. D.

HAS TROUBLE WITH MAGNETO

Washington Court House, Ohio—Editor Motor Age—Will Motor Age, through the Clearing House, advise me as to what is the trouble with my Remy magneto on a 1909 Regal 30? The motor has just been overhauled. It runs fine when running on three batteries, but when switched to the magneto it misses and runs very badly. The platinum points are all right and everything seems in fine shape. The breaks occur when full retarded, when the mark on the distributer is at the posts. When running on the batteries it will make a spark ½-inch long, but on the magneto the spark is hardly visible.—A Reader.

Since the platinum points are in fine shape, and all adjustments correct, Motor Age would advise that you send the magneto back to the Remy factory at Anderson, Ind., where it will receive prompt expert attention, and where, if the trouble is due to defective workmanship, it will be rectified free of charge, according to the guarantee.

Before sending the machine to the factory, however, it would be advisable to note the possible causes of your trouble illustrated in Fig. 3 and then again examine the circuit-breaker of your magneto. As illustrated, the circuit-breaker consists of a V-shaped piece of metal M between the arms of which turns a cam C, on the end of the armature shaft, which is elliptical in shape. Where this cam strikes upon the arm A of the V-shaped member M is fixed a hardened steel plate.

It sometimes happens that this plate becomes worn as indicated, and interferes with the operation of the apparatus; this is due to having too severe a tension on the spring S. The V-shaped part of the magneto may be taken off by removing the nut or stud N, and the plate L then san be readily removed by cutting off the heads of the rivets R. A new plate and rivets may be obtained from the factory or any of the local agents at a cost of 20 cents. When the circuit-breaker is properly adjusted and the cam C is in the position indicated in Fig. 3, there should be $\frac{3}{32}$ of an inch space at the point O; and when the widest diameter of the cam is in a horizontal position the points P should be separated $\frac{1}{32}$ of an inch.

TOO MUCH WATER

Belwood, Neb.—Editor Motor Age—When I run about 30 or 35 miles I have to renew the water in the radiator of my Moline car. The radiator does not leak, but I notice water comes out of the exhaust pipe. I noticed in one issue of the Motor Age a solution to repair a water leak in the cylinder but cannot find the issue.—Frank Mueller.

Perhaps you insist on keeping your radiator too full of water. It is not required that the radiator remain entirely full of water, in fact it is impossible to keep some radiators entirely full, because of the location of the overflow pipe and the force of the circulation. In many radiators the water will remain at a height of 2 or 3 inches below the top, and when filled to the top the superfluous water will be forced out soon after the motor has been started. If you had a water leak into the inside of your cylinders your motor would misfire; the water would collect on the points of the spark plug, causing a shortcircuit. The water that comes

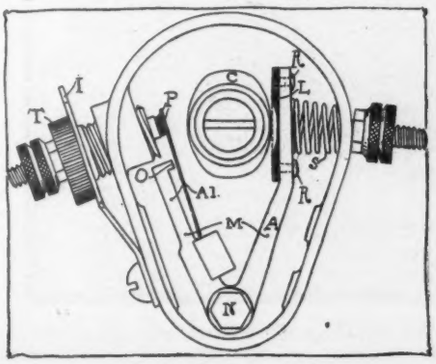


FIG. 3—REMY MAGNETO DISTRIBUTER

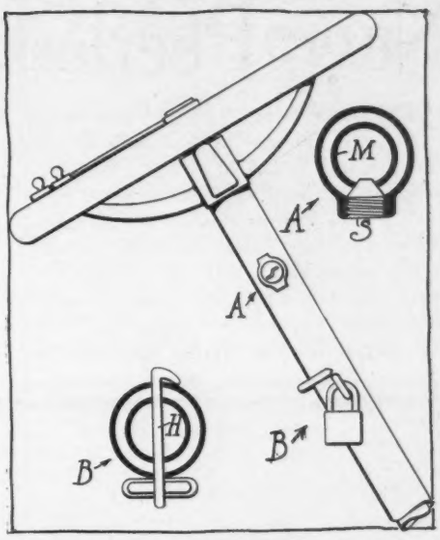


FIG. 4—STEERING GEAR LOCKS

out through the exhaust pipe is not due to a leak in the cylinders, but is formed in the chemical action of the gases during combustion. It is known as the water of combustion and passes out of the cylinder in the form of vapor. In the muffler this vapor is condensed and drips out after the car stands idle for a while.

A most satisfactory method of rusting up a cracked cylinder and thereby closing a leak is to use sal ammoniac. Take ½ pound of pulverized sal ammoniac; mix it with ½ gallon of water and boil. Pour this into the cylinder jacket and let it stand overnight. Drain this out on the following morning and allow the jacket to stand idle for a day, during which time the rusting to fill the crack should take place. Plain ammonia has been used, but not with so great success. When used a pint of pure ammonia is mixed with a pint of water, or double quantities if desired, and the jacket filled. It should be allowed to stand for a couple of days at least, when the jacket is drained and an opportunity left for the rusting to take place.

TO LOCK STEERING GEAR

Denver, Colo.—Editor Motor Age—I have a patent, No. 977,533, recently granted me, for locking the steering gear of a motor car, which was invented for the purpose of preventing joy-riders from riding away with it. Fig. 4 shows two methods of applying the idea. At A is shown a lock, which can be arranged in the stationary portion of the steering column as shown in the sectional drawing. This simply comprises a stud S, arranged in the steering column casing, having a pointed end which registers with a hole in the movable tube or column M of the steering gear, A Yale lock and keys may be contained in the screw for operating and locking it in position. At B is shown another design, comprising a hasp H, which passes through both the steering portion and the casing in the sectional drawing B1. This is practicable where the spark and throttle controls rods and tubes do not pass down through the steering column.—C. H. Mayers.

New Peerless Line Has a Wide Range

PEERLESS motor cars for the season of 1912 are now in the course of construction, and as shown in the table given herewith, the line has been increased from three to five chassis models by the addition of two new chassis with six-cylinder motors rated at 38 and 47 horsepower. These, together with a most complete array of foredoor body styles, make the Peerless product for the coming year suitable for practically all purposes to which a refined and high-priced car is adaptable.

ELECTRIC GENERATOR ON 1912 PEERLESS

It has been the policy of the Peerless company to make any little changes or improvements from year to year that would add to the comfort of the passengers or to the convenience of the operator, and in concurrence with this policy the most notable feature among the changes for 1912, is the adoption of the Grey & Davis electric lighting system, in which a constant current dynamo, Fig. 1, driven by belt from the pump shaft of the motor furnishes current for the head, dash, side and tail lights. Instead of a barrel type crankcase in which the crankshaft is inserted through an opening at one end of the case, all six-cylinder motors have seven instead of four main bearings, which are strapped in a conventional manner to the upper half of a horizontally split crankcase; the lower portion of the case simply acting as an oil pan for the splash lubrication employed. The subframe, which in 1911 cars supports both the motor and gearset, is dropped in the 1912 construction, and the motor is suspended direct from the side members of the main frame by two I-beam drop-forged cross members; while the gearset rests on an individual subframe suspended from two heavy channel steel cross-members arranged amidships of the main frame.

Another new feature of the six-cylinder models for 1912, is that at a nominal extra charge the car can be made for left-hand drive instead of the conventional right hand. In the six-cylinder 60-horsepower car the valves have been increased from 1⅞ to 2¼ inches in diameter. To make possible the optional left or right-hand drive, the oiler no longer is cast integral

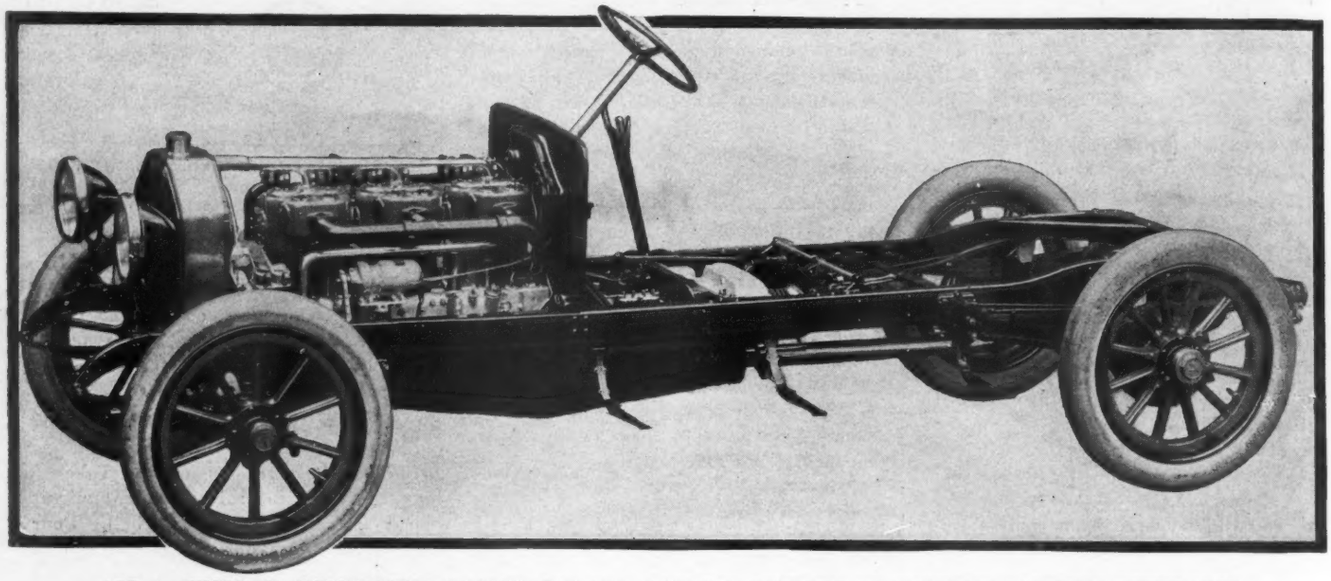


FIG. 1—PEERLESS SIX-CYLINDER CHASSIS FOR 1911, SHOWING POSITION OF ELECTRIC LIGHTING GENERATOR

Five Peerless Chassis Models for 1912

	Bore	Stroke	Wheel-base	Front Tires	Rear Tires
38-horsepower, six-cylinder	4	5½	125	36 by 4½	36 by 4½
47-horsepower, six-cylinder	4½	6	137	36 by 4½	37 by 5
60-horsepower, six-cylinder	5	7	140	37 by 5	38 by 5½
40-horsepower, four-cylinder	5	5½	125	36 by 4½	37 by 5
26-horsepower, four-cylinder	4	4⅝	113	34 by 4½	34 by 4½

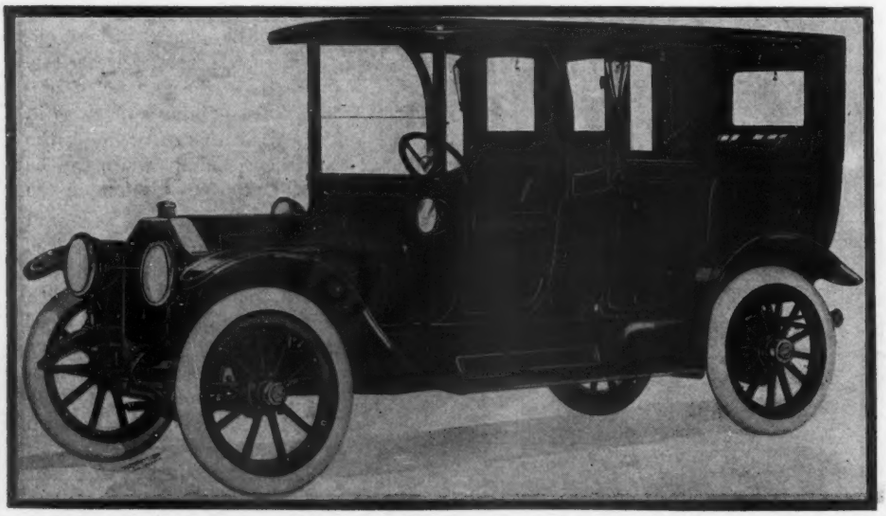
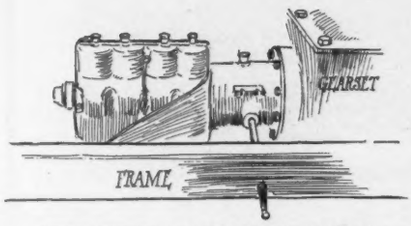


FIG. 2—SIX-PASSENGER LIMOUSINE BODY ON 38-HORSE POWER SIX-CYLINDER CHASSIS

Five Chassis Models 1912 Offering

with the crankcase of the motor but is a separate unit with the crankcase adapted for its attachment on either side. In addition to this change in the oiling system, troughs or cups now are arranged near the lower ends of the connecting rods to facilitate the lubrication of the crankpins. The Bosch double synchronized ignition system has been adopted, which comprises two independent systems, including two sets of spark plugs, a high-tension magneto and storage battery as current sources, and a single unit coil of the vibrating self-starting type arranged on the dash so that only the face of it is visible. This does away with the more bulky dash coil employed with the previous ignition systems.



TIRE PUMP ON PEERLESS CARS

Some Other Changes

There also is a change in the carbureter and intake manifold design of the new cars. About 33 per cent of the chrome tan leather facing of the expanding clutch is occupied by cork inserts. The brake control-shaft now crosses the top of the change-gearcase necessitating slight changes in the shape of the removable inspection plate; and improvements have been made in the spring design by increasing the number of leaves and making them thinner, so now they are slower acting and more work-absorbing.

The accompanying illustrations show the general arrangement of the various features of Peerless construction. As for details, the motor is a four-cycle water-cooled type with the T-type cylinders cast in pairs, and with the valves in offset chambers on opposite sides. Simplicity and accessibility are features of the motor design, and a glance at the motor impresses one with the symmetrical and substantial arrangement and attachment of the external fittings.

The crankshaft is made from one solid piece, is heat-treated and the bearings ground to size. Both shaft and flywheel are accurately balanced; each piston, connecting rod and wrist pin is finished to a uniform weight; and all reciprocating parts are balanced so that vibration is practically eliminated and wear reduced to a minimum. Plain bearings of large dimensions are used on the crankshaft; piston pins operate in bronze bushings; and every gear of the motor is housed in an oil tight compartment of the crankcase and runs in oil.

Cooling System Features

In the cooling system, the water circulation is maintained by a gear-driven gear pump located on the left side of the motor immediately behind the engine gear-case. The radiator is of the horizontal tube-and-fin design, with a fan behind it. The waterjackets of the cylinders are large and so designed that the cooled water from the radiator and pump is taken in on the exhaust side of the motor and discharged from the top over the combustion chamber. These waterjackets taper so the greatest amount of water is at the top of the cylinders, which is the point of highest temperature. A large opening over the waterjacket provides for the careful and certain removal of core sand in the course of manufacture and for the

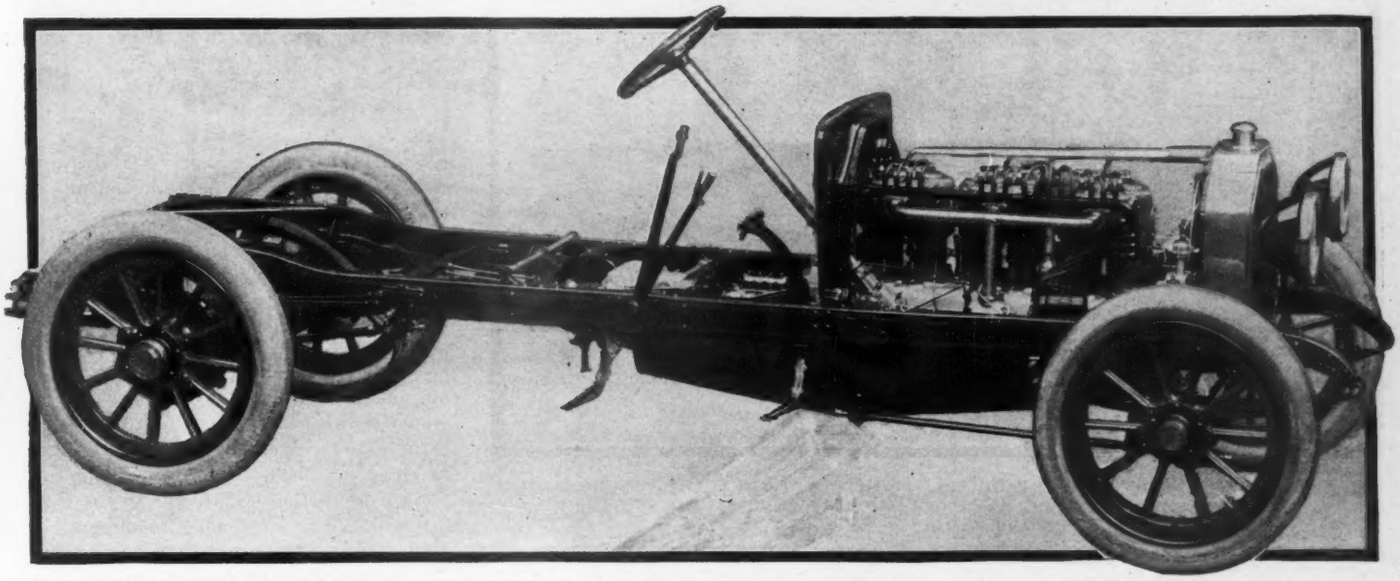


FIG. 3—RIGHT SIDE OF 1912 PEERLESS SIX CHASSIS SHOWING SIMPLICITY OF NEW GAS INLET MANIFOLD AND IGNITION WIRING

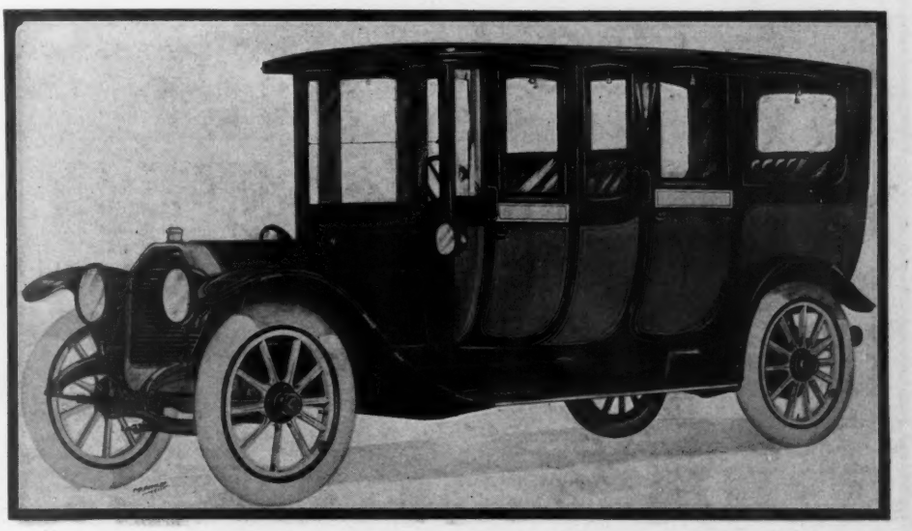


FIG. 4—SEVEN-PASSENGER BERLINE LIMOUSINE ON 48-HORSEPOWER SIX-CYLINDER CHASSIS

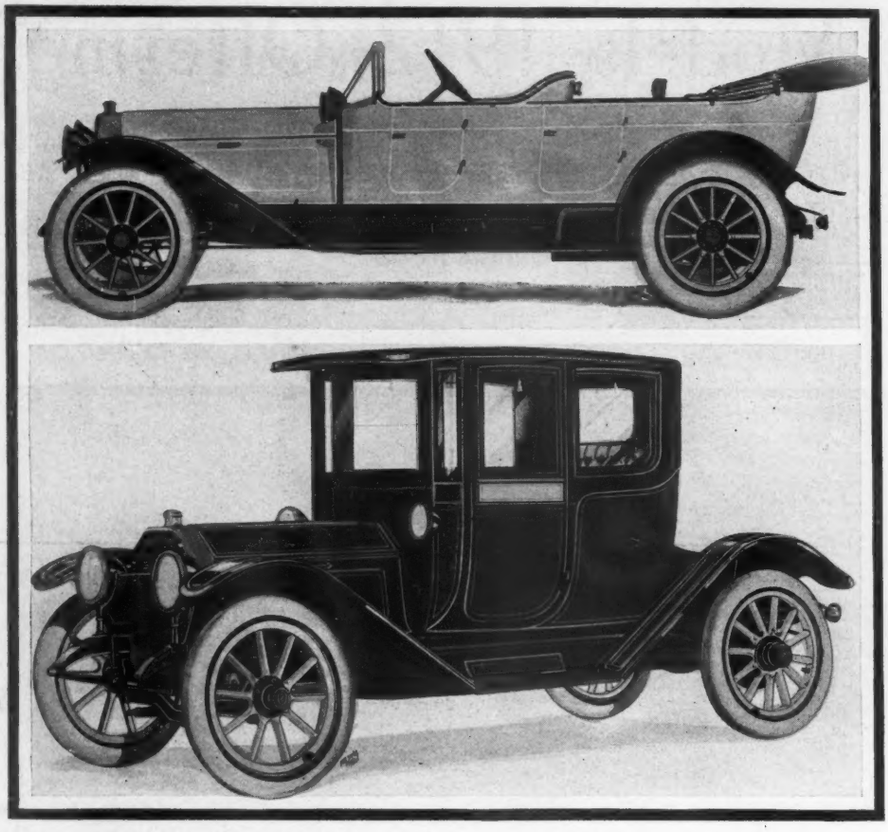


FIG. 5—SIX-PASSENGER TORPEDO BODY ON 60-HORSEPOWER SIX-CYLINDER CHASSIS
FIG. 6—THREE-PASSENGER COUPE ON 38-HORSEPOWER SIX-CYLINDER CHASSIS

easy inspection or cleaning of the water-jackets at any time while in use. A brass plate covers these openings and forms an outlet through which the heated water passes to the radiator.

Lubrication of the motor is by means of a splash system with a mechanically operated oil-pump in a separate reservoir to maintain a certain level in the splash compartments into which the crankcase is divided. This reservoir is located on either the right or left side of the crankcase, according to the location of the steering gear, near the rear motor support, and it is driven by shaft and worm-gears from the camshaft. Small and neat sight feeds on the dash are provided to show when the oiler is in operation. The proper oil level in the crankcase may be determined by means of stand pipes extending upward through the bottom of the case; petcocks are attached to the lower and outer ends of these standpipes, and a series of rods and a lever are provided by means of which the petcocks can be conveniently opened and closed. A single hand-pump is incorporated in the oil reservoir for filling the splash compartments of the crankcase; and the lever that controls the opening and closing of the petcocks is so situated that the hood over the motor cannot be closed while the petcocks are open; thus there is no possibility of driving off with the petcocks open. Grooves and pockets on all faces of interior crankcase partitions, and cups on both sides of all connecting rods provide means whereby all crankshaft bearings are continuously flooded with oil.

Location of the Magneto

In the ignition system, the high-tension Bosch magneto is located on the right side of the crankcase, just behind the case that contains the ball governor of the carbureting system, and is driven by the same shaft from a steel gear in mesh with the camshaft gear. Short heavily-insulated cables with simple connections transmit the ignition current from the magneto to a bus bar, from which other short and direct cables of similar construction transmit the currents to the spark plugs. In the battery system the current from the storage battery passes through a single-unit Bosch vibrating dash coil, and is distributed by a timer that is located between the two forward cylinder castings and driven by bevel gears from the right camshaft.

The new Peerless carbureter is provided with primary and secondary auxiliary air valves; both main and auxiliary air intakes are screened, and the respectives passages have damper valves which are actuated by small levers on the dash. A small force pump attached to the frame and operated from the front of the car is provided to prime the motor. This pump draws fuel from the carbureter and sprays it into the valve chambers directly under the valves through pipes contained in the intake manifold. All carbureter and ignition control rods, where movements must be simultaneous, are fitted with joints of the ad-

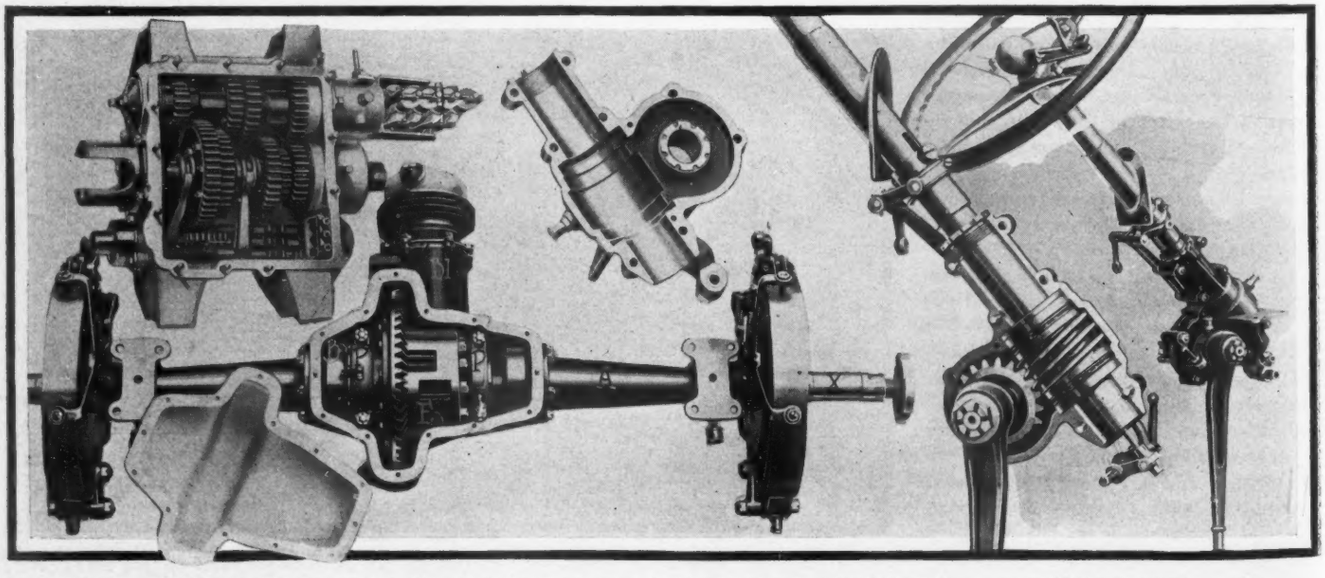


FIG. 7—SHOWING FEATURES OF GEARSET, REAR AXLE AND STEERING MECHANISMS IN THE 1912 PEERLESS CARS

justable ball and socket type to compensate for wear and eliminate lost motion.

The generator of the Grey & Davis lighting outfit is mounted on a substantial aluminum bracket on the left side of the motor crankcase and is driven by means of a laminated leather belt from a pulley on the water pump-shaft. A special dash set including an ammeter, automatic electric cut-out, junction box and light control switch, is attached to the dash in such a manner that only the ammeter dial and light control switch appear on the rear or operating side of it, and the rest of it only is exposed on raising the hood.

Expanding Shoe Clutch Used

From the motor, the power is transmitted through an expanding shoe clutch which is extremely simple in design and readily adjustable. A double universal joint is employed between the clutch and gearset to facilitate assembly and disassembly and to render the transmission mechanisms uneffected by the contortions of the frame on uneven roads.

The gearset is a very compact one with both shafts in the same horizontal plane and mounted on annular ball bearings. The gears are large and wide-faced and give four forward speeds with direct drive on the third speed. All operating parts of the gearset are enclosed in an aluminum case which is divided horizontally above the center line of the bearings so as to increase the rigidity of the casting. The four-cylinder air-pump installed on the Peerless cars for 1911 occupies the same position for 1912. This pump is for inflating tires, and is attached to the front end of the gearcase and driven off the end of the countershaft. A clutch, controllable by means of a rod and lever which conveniently pierces the side member of the frame, is provided to make connection between the pump-shaft and counter-shaft.

There are two universal joints in the propellor shaft which are encased in telescoping leather shields filled with grease.

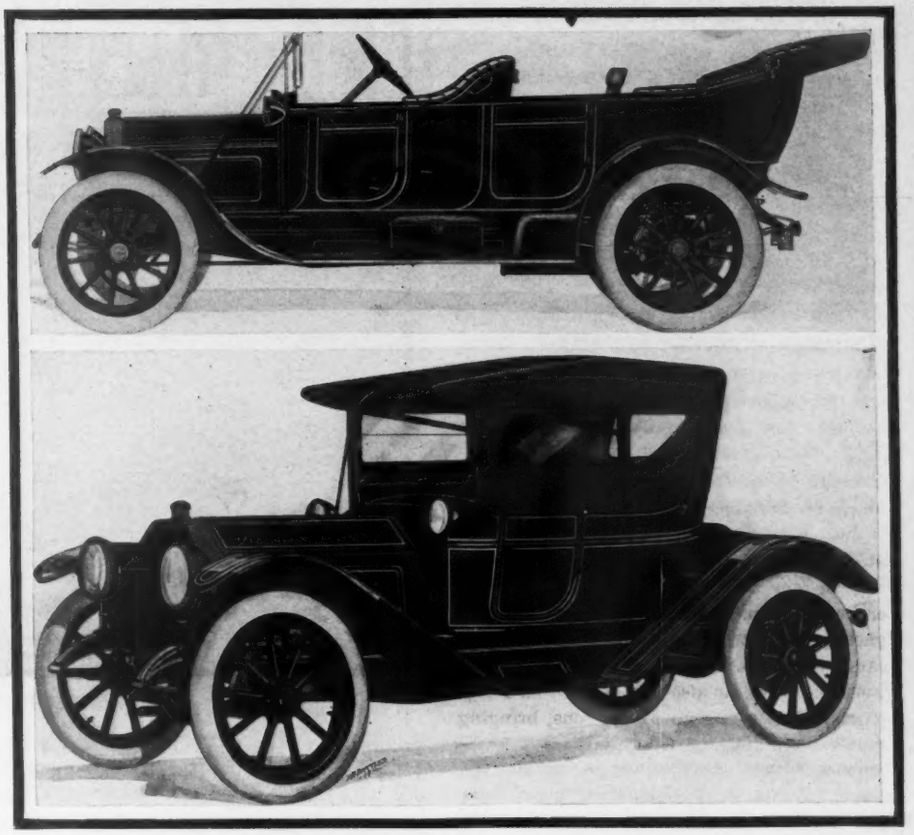


FIG. 8—SEVEN-PASSENGER TOURING CAR 40-HORSEPOWER FOUR-CYLINDER CHASSIS
FIG. 9—THREE-PASSENGER ROADSTER ON 38-HORSEPOWER SIX-CYLINDER CHASSIS

In the floating rear-axle, whose construction is shown in Fig 7, ball bearings are used throughout; and the load of the car is carried on the extremities X of the tubes A.

On either side of the differential mechanism and making connection with the live axles, is a universal joint of the internal and external-gear type; this is to allow for the cambered or arched rear axle construction which permits of the use of dished rear wheels, and which greatly improves the appearance of the car. By removing the aluminum cover, as shown in the illustration, and pulling out the driving shafts L a few inches so as to disengage the universal joints on either side of the differential mechanism, the entire bevel gear and differential mechanism may be taken out after simply removing the strap P which secures the bearings. Adjusting collars B and B1 are provided for taking up any wear in the driving pinion and gear, and a filling pipe O is furnished for replenishing the oil supply in the gearcase.

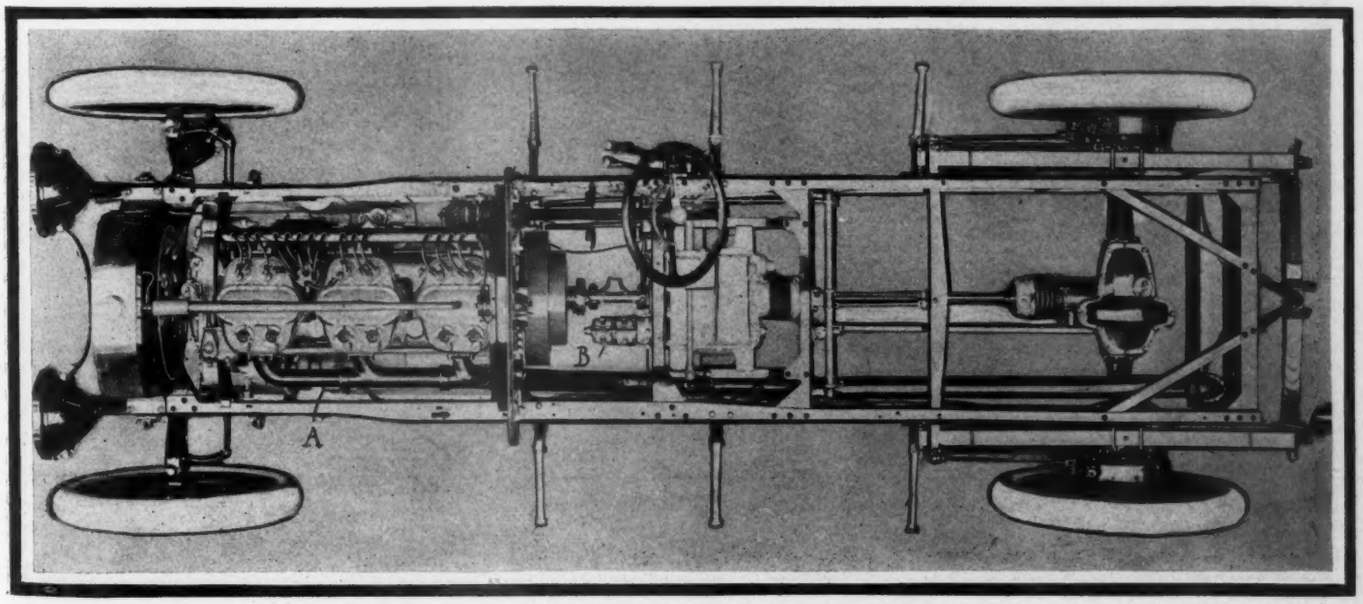


FIG. 10—A PLAN VIEW OF THE 1912 PEERLESS SIX-CYLINDER CHASSIS, SHOWING ARRANGEMENT OF THE FEATURES

In the Realm of the

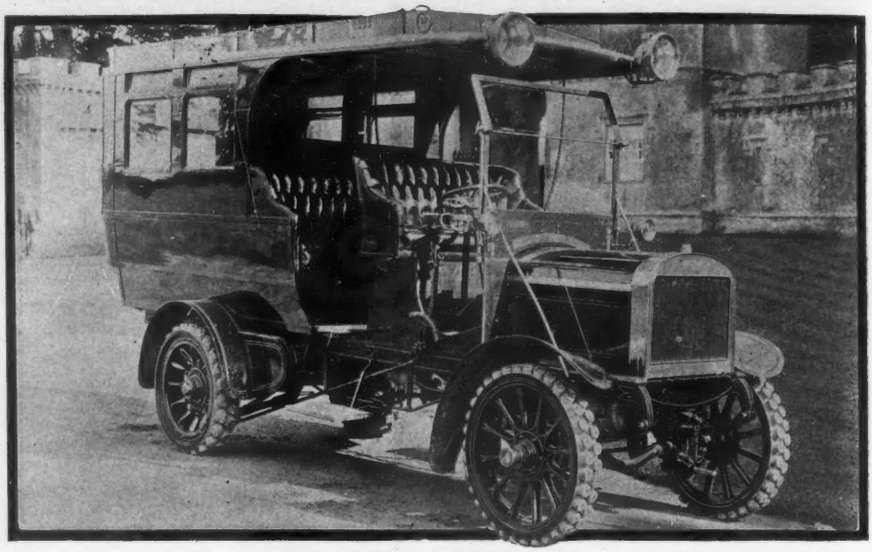
OFF ON LONG DEMONSTRATION

THE Dayton Auto Truck Co., of Dayton, O., is determined to demonstrate the possibilities of the power wagon in cross country work and with that idea in mind one of its 3-ton trucks was started Monday morning from the Palmer house, Chicago, on a trip to New York City. The truck is in charge of Spohr and Bennett and carries 6,000 pounds of Swift & Co.'s products from the stock yards. The usual Chicago-New York route will be followed.

COMMER CONVERTIBLE CAR

An innovation in the line of a convertible car for suburban and country use has been brought out by Wyckoff, Church & Partridge, New York. This car, on the Commer chassis, is designed to fill three distinct fields of usefulness. It can be employed as a bus, with closed top, open top or no top at all, seating from eight to fourteen passengers, thus filling the needs of estate holders who, upon the arrival of a number of guests, frequently find their regular touring cars inadequate as a means of transporting visitors. This car also can be used as a luggage cart, carrying up to 2½ tons, bringing supplies and baggage from the station to the country home. Another use is for long-distance touring, a special arrangement being provided fitted with berths, a table, with ample storage room for food and clothing. This type can also be fitted up as a shooting brake, with gun and ammunition lockers.

There scarcely is any limitation to the variety of bodies or the appointments possible in this car. While it is not built for unusual speed, it can travel easily up to from 25 to 30 miles an hour, taking good hills at 20 miles. It has large, strong springs and rides over country roads more smoothly than the average touring car. Each body will be built to suit the personal taste of the owner. There will be no doubles—no stock models.



THE COMMER CONVERTIBLE CAR

MOTOR TRUCK CONTESTS

The Chicago Motor Club has selected September 18, 19 and 20 as the dates for its commercial motor vehicle test, which will be in the nature of a demonstration rather than of a contest. The daily runs will be in and about Chicago, the first day going into Indiana, the second day to Evanston and to Oak Park, and the third day to the southwest. In the way of an innovation, it is proposed to start three horse-drawn vehicles with the power wagons and see how long it will take them to cover the same routes the trucks do.

The Chicago affair is one of the four truck tests which already have been scheduled for the season. The Los Angeles Examiner will put on a truck event May 24,

THE DURABLE DAYTON
MFG'D. BY THE DAYTON AUTO TRUCK CO. DAYTON OHIO.
CHICAGO TO NEW YORK RELIABILITY RUN
LOADED WITH 6000 LBS. SWIFT'S PRIDE CLEANSER
CONSIGNED TO JAMES BUTLER INC. NEW YORK CITY
Diamond Tires
THE TRANSPORTATION PROBLEM SOLVED
Diamond Tires

DAYTON 3-TON TRUCK RUNNING FROM CHICAGO TO NEW YORK CITY

Commercial Car

C. N. TUFT'S IDEA OF COMBINATION VEHICLE

while the second one will be at Philadelphia on July 14, when the Quaker City Motor Club will put on a run. The Chicago Evening American has been assigned August 1 for its affair.

NEW TYPE OF FIRE TRUCK

A new fire truck, placed in commission recently at North Braddock, Pa., shows what can be done in adapting a commercial vehicle to the requirements of public service. It is a Packard truck chassis with special body and equipment, supplied by Albert F. Leuschner, of Homestead, Pa. The stepboards, tool boxes, hose basket and brass railings are rated as part of the body. The equipment includes porch ladder, roof ladder, 32-foot extension ladder, ax, crowbar, rotary gong, two Babcock extinguishers, and two 25-gallon brass chemical tanks. It is so designed as to carry additional tanks of larger capacity, as well as standard fire hose. The chief or captain has the seat beside the driver and the other fire-fighters are ranged on the running boards.

EXAMPLE OF MOTOR SPEED

The value of motor fire wagons was demonstrated in Malden, Mass., in a practical manner a few nights ago when an alarm was sounded from a dangerous quarter. The box was about equally distant from three fire houses, two of which are occupied by horse-drawn vehicles and the third by a Knox combination wagon. The Knox wagon made the run of a mile to the fire, used the chemical stream and put the fire out before the first horse-drawn apparatus arrived, 7 minutes after the motor car reached the scene.

KENOSHA IS SATISFIED

Proof of the economy of public service motor cars is found in the figures compiled by Chief Isermann of the Kenosha, Wis., fire department, which has had a Rambler truck in service for 6 months or more. During the first 5 months the car was in service it answered thirty-nine alarms and made as many more trips on inspection runs. The total cost of upkeep, the chief claims, of the truck for each month on the average was $1.37, which is about half as much as it costs to keep a pair of horses for 1 day.

HAS A CONVERTIBLE RIG

C. N. Tufts, a furniture dealer at Herington, Kas., has a Moline car which he uses for both business and pleasure. As a business proposition he figures he saves from $12 to $25 a month. He has hauled a dresser, bed, springs, mattress, dining table, six chairs and a rocking chair in one load. The car is a Moline, for which a special body has been built. In his garage there is a small block and tackle which enables him to shift bodies in 20 minutes.

PACKARD FIRE TRUCK IN SERVICE AT NORTH BRADDOCK, PA.

From the

LONG Truck Run Ends—A. L. Westgard, in charge of the Saurer truck, which left Denver March 1 carrying a 3-ton load, reached the end of the journey, Los Angeles, on May 8.

Alliance Wants Racing—Plans are under way to hold motor car races in Alliance, O., this summer and fall, and to convert Rockhill race track into a miniature Indianapolis speedway. The turns on the present track are banked more than ordinary and the course can be converted into a fast one with little expenditure.

Run to Arcadia—The Missouri Automobile Association announces a reliability run of 3 days from St. Louis through Missouri to Arcadia, to take place in the course of the next 6 weeks. The run is to mark the completion of the new motor road between St. Louis and Arcadia. A trophy has been donated by the Arcadia Country Club.

Davenport Will Have Meet—Davenport, Ia., is to have a combined motor car and aviation meet this summer, July 2-4 being announced as the tentative dates. The promoters of the affair are Koester & Knowles, managers of the Campbell Motor Car Co., who have announced that they have leased the Davenport mile track and will put it in shape. The promoters plan to have at least three different events, although the nature of each has as yet not been definitely determined.

Be Careful In Indiana—Motorists who contemplate touring to the big race to be held in Indianapolis on May 30 will do well to travel slowly through many of the Indiana towns. In past seasons the tourists seem to have been so imbued with the idea of speed that in many of the little villages the townspeople reaped a harvest from the strangers in the way of fines and costs. Most of the incorporated towns have laws which require a very much reduced speed upon the paved streets, and it will be advisable for motorists to look out for such traps. Towns east of Indianapolis, particularly, are after as much of an income as possible from this source, and will consider as sufficient evidence the word of people on the street who will testify that the motor car was going too fast.

Davenport Reliability Run—Decoration day will be celebrated by the Davenport Automobile Club by a reliability run, according to the present plans of the touring committee. The route and conditions of the run have not been definitely settled on, although the Cedar Rapids-Iowa City run has been suggested.

Adds to Indianapolis Prize Fund—Additional emoluments to the list of prizes offered for the 500-mile international sweepstakes race at Indianapolis, May 30, have been offered by the Emil Grossman Co., New York city. The sum of $250 will be awarded to the winner, $100 to second best and $50 to third, provided the lucky drivers have their cars equipped with Red Head spark plugs.

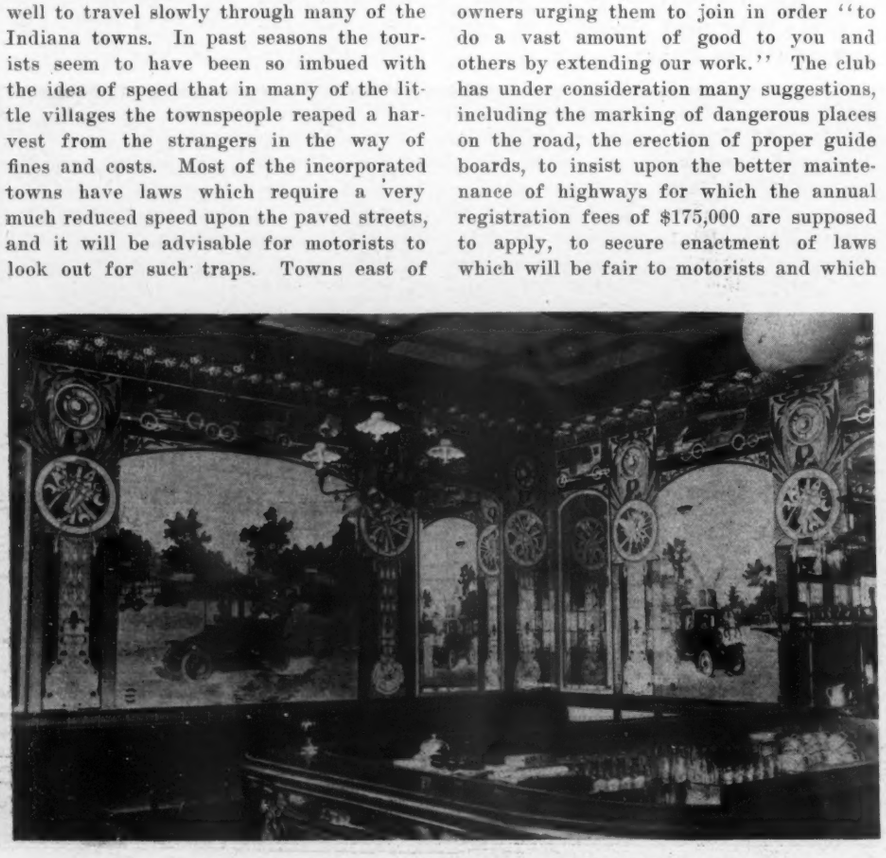
Hartford Club Wants Members—The Automobile Club of Hartford is making a decided effort to increase its membership. At a meeting of the board of governors of the Connecticut organization various ways and means were discussed, with the idea of getting motorists into the club. Circular letters will be sent out to all owners urging them to join in order "to do a vast amount of good to you and others by extending our work." The club has under consideration many suggestions, including the marking of dangerous places on the road, the erection of proper guide boards, to insist upon the better maintenance of highways for which the annual registration fees of $175,000 are supposed to apply, to secure enactment of laws which will be fair to motorists and which will discourage reckless driving. Members have been requested to report highways which need improving and also locations where sign posts would be appreciated. The club plans an active summer and at present is doing much to improve conditions all over the state.

Tag Business in Wisconsin—The state of Wisconsin established a new record for motor car registrations during the first 4½ months of 1911. During this period more than 3,100 licenses were issued, making a total of 18,750 issued since the registration law went into force. All Wisconsin licenses are perennial.

Cleveland Run Sanctioned—Official sanction has been received from the A. A. A. for the Cleveland News reliability run, which will be held July 17, 18 and 19. The run will cover a route from Cleveland, O., to Youngstown to Wheeling the first day; Wheeling to Columbus, a zig-zag route, the second day; and from Columbus to Cleveland via Norwalk, the third day. This route is only tentative and may be changed after the pathfinding car makes its trip.

Adds to Fuel Test Card—The Chicago Motor Club has added to its fuel economy test card by putting on a division in which straight gasoline consumption will be the factor that determines the winners. It will be a piston classification, according to A. A. A. rules. The car that uses the least gasoline on the run will be given the Charles E. Gregory cup. The affair is scheduled for May 25, going to Milwaukee and return. In addition, the regular program will be adhered to in which one division will be a demonstrating class and the other a stock car event which will be run under the formula.

Paris' Latest—Artists do not appear to be alive to the possibilities of the motor car as a decorative subject, if one may judge from the rare occasions on which it is employed for inns, hotels, clubs, etc. But the fine effect obtainable without the use of flowers, animals, huntsmen and more or less allegorical subjects has been shown by the decoration of a bar just opened in the Avenue de la Grande Armee, Paris. The motor car has been adopted exclusively as the motive of the decorative scheme. The large mosaic panels represent the Place de l'Etoile, a place which always is crowded with motor vehicles; the Porte Maillot, one of the gates into the city which is also largely used by motor cars; a picturesque highroad; a scene near the Longchamps race course, with a motor car in the foreground and a dirigible balloon overhead; an exciting moment in a recent motor car road race. All are well done and faithfully represent modern types of cars. For the freize, the



PARIS BUFFET WITH MOTORING DECORATIONS

Four Winds

border and the columns, the artist has made use of wrenches, vices, nippers, keys, rules, spark plugs, sectioned motors, magnetos, carbureters, etc., with just as happy and much more artistic result than if he had employed the more conventional flowers and vines.

Ohio's Growth—The records of the Ohio state motor car department show that by the middle of May as many cars were registered in the Buckeye state since January 1 as were registered during the entire 12 months of 1910. By May 15 there were 33,100 sets of number plates issued as compared with 32,941 during the entire year of 1910. Registrar Sherer estimated the total number of cars which will be registered in 1911 as 45,000.

Time to Start Something—A mass meeting was held recently in Canton, O., in the interest of good roads. Motorists, taxpayers, members of the Ohio Farmers' Grange and Ohio Federation of Good Roads were present and an extensive campaign was outlined for the improvement of the Stark county highways. Stark is the sixth richest county in Ohio, yet it stands near the bottom in the matter of good roads. Out of eighty-eight counties in Ohio there are seventy-seven with more miles of good roads than Stark.

Run for Electrics — Details concerning the forthcoming run for electrics, to be conducted by the Quaker City Motor Club, on Saturday, June 10, have not been perfected as yet, but it is planned to make the distance approximately 50 miles to some nearby suburban point. Entry blanks will be issued on Saturday, May 20. There will be four prizes offered, two for women and two for men drivers, with, as was the case in the organization's recent social run to Atlantic City, an appropriate souvenir to each entrant, and announcement has been made that a new system of awarding prizes will prevail.

Highway Already Popular—Already motorists are commencing to make the summer trip over the route of the Pacific highway. Inquiries are coming in almost daily to the Pacific Highway Association headquarters for road information, as to whether or not the trip is practical to be made so early in the season. Most of the inquiries for road conditions are coming from southern California, although several northern motorists are planning on making the trip as far south as San Francisco during the summer, and a few will continue on to Los Angeles and the Mexican border. Detailed information will be available at all times at the association headquarters in Seattle and motor tourists who are planning on making the trip will do well to get in touch with this information before starting out. Officials of the Pacific Highway Association are including not only information concerning the north and south trunk line road, but also details as to where the most attractive side trips can be made.

Reblazing Badger Trail—President M. C. Moore of the Wisconsin State A. A., pathfinder and pilot of the 1911 reliability tour, which is to be held July 17 to 22, started Monday to finally lay out the route. The trail was blazed early in November of last year and will now be re-marked and the influence of the coming tour in the matter of highway improvement and enthusiasm measured. The pathfinding party again set out in an Overland.

Des Moines Run Sanctioned—The second annual little Glidden tour of the Des Moines motorists is to be a sanctioned event. John Gibson, chairman of the motor committee of the Hyperion Field and Motor Club this week received word from the officers of the A. A. A. that the run would be sanctioned and that the local club would be given the right to name the referee and eligibility committee. As proposed, the run will cover 800 miles through eastern and northern Iowa. It will start on June 19 for a 4-day run. Forty entries already have been received.

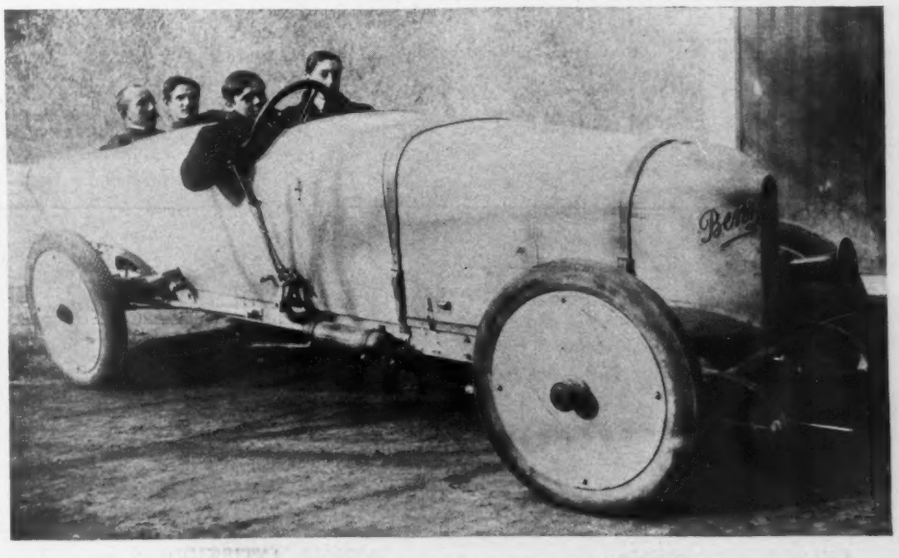
Cleveland Making Plans—Numerous sociability and test runs will be the order of the summer for the Cleveland Automobile Club. Among the most important of the season's events will be orphans' day, which, according to a decision of President Bonfield of the Ohio State Automobile Association, will be held throughout the state on June 8. A. R. Davis has been appointed chairman of the committee on orphans' day and already is at work rounding up pledges of cars for that day. The Cleveland club will hold a run on the first Sunday of each month. The remaining Sundays will be allotted to dealers and manufacturers for their own runs. The first club run will be held May 21 and will be an acquaintance run.

Cleveland Starts a Boom — Announcement has been made by President Fred C. Wood of the Cleveland Automobile Club of extensive plans for reorganizing the club and of booming the organization with the ultimate aim of obtaining 1,500 new members.

St. Louis' New Officers—Newly selected officers of the Automobile Club of St. Louis are: Roy F. Britton, president; James Hagerman, Jr., vice-president; Edward M. Flesh, secretary-treasurer. The board of governors consists of Sam D. Capen, J. Howard Holmes, Joseph R. Barroll, Samuel Plant, George J. Tansey, Alden H. Little, and the officers. The club retains its quarters in the Planters' hotel.

Arrange Tour Plans—Indiana manufacturers have decided to start the Indiana four-state tour from Indianapolis Wednesday, July 12, at 2 p. m., returning Saturday night, July 22. The route will include Terre Haute, Paris, Danville, Decatur, Bloomington, Peoria, Springfield, East St. Louis, St. Louis, Keokuk, Burlington, Muscatine, Dubuque and Chicago, spending Sunday in St. Louis. Fifteen factories have promised entries for run.

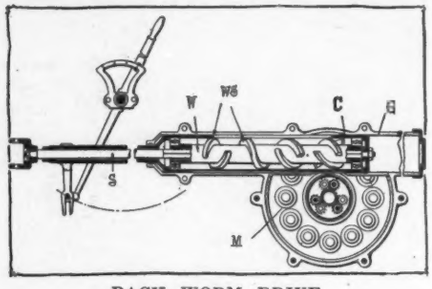
Another Globe-Girdling Trip—To comply with the requests of the Warren Motor Car Co.'s foreign dealers, a Warren will soon start on a trip around the world. The globe-circling stunt will be handled by Cyril B. Maddocks and R. G. Mitchell. Within a few days the earth-girdling car will leave New York for England. The globe trotters will go from London direct to St. Petersburg, then through Russia, Germany, France and Switzerland. The next stop will be at Turin, Italy. They will be there while the great exposition is on. Egypt will be the next country visited by the Warren, and after that comes India and Australia. The trip will last about a year.



PRINCE HENRY TYPE OF BENZ TORPEDO

Current Motor Car Patents

NEW Type of Worm Drive—No. 990,099, dated April 18; to William Emil Bock, Toledo, O.—This patent relates to a power



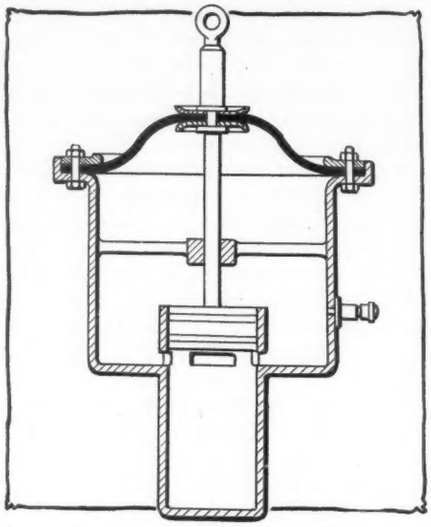
BACK WORM DRIVE.

transmission mechanism comprising a driveshaft S, a longitudinally shiftable case C enclosing the shaft, a worm shaft W carried by the case for shifting movements therewith over the driveshaft, a number of worm sections WS on the worm shaft, a driven member M, means for locking the case against shifting movements and means for moving the case to release the locking means and then to move it to selectively place the worm sections into driving engagement with the driven number.

Mills Pneumatic Vehicle Spring—No. 991,165, dated May 2; to Frank W. Mills, Chicago, Ill.—The pneumatic spring covered by this patent is shown herewith and is a combination comprising a compressed-air chamber having a relatively wide section, and a narrower section closed at its outer end. A flexible diaphragm covers this chamber, which is normally sustained by the uniform pressure in both sections thereof. A piston carried by the diaphragm works in the narrower chamber section, which is normally held by the diaphragm out of compressing engagement with the narrower section.

Ohlsson Grip-Thread—No. 991,013, dated May 2; to Charles J. Ohlsson, New York, N. Y.—This patent relates to a non-skid tire chain, which is not greatly unlike those now in general use in wet weather. It differs, however, in that it has protectors under the chains that pass over the tread of the tire to prevent damage thereto. As illustrated, the invention comprises a pair of attaching side chains, a plurality of gripping members secured thereto, protecting means under the gripping members, and means, embracing the gripping members, and serving to secure the protection members to the attaching members.

Hormel Antiskidding Device—No. 991,445, dated May 2; to August Hormel, New York, N.Y.—The antiskidding device



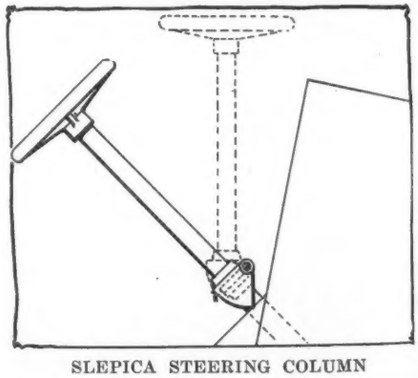
MILLS PNEUMATIC SPRING

to which this patent relates is illustrated herewith and differs considerably from anything now in use for the same purpose. It comprises a vehicle axle, a rearwardly extending and latterly slidable arm pivotally suspended therefrom and provided with a transversely disposed guide, a block movable along the guide, a trailer hung in the block and a spring engaging the block and exerting a downward pressure on the trailer along the axis of the guide.

Rotary Motor Ignition—No. 989,221, dated April 11; to N. O. Allyn, Warren, O.—In rotary explosion motor of the two-cycle type tubes or passageways connect the explosive chambers of the adjacent cylinders so that the flame from the explosion in one cylinder can travel through the tube and ignite the mixture in the cylinder next to fire. In each passageway are means adjacent to each cylinder for normally closing the passageway and also means for utilizing the explosive force in each cylinder for first opening the valve to allow the flame to pass and also means for closing the valve after the flame has passed through.

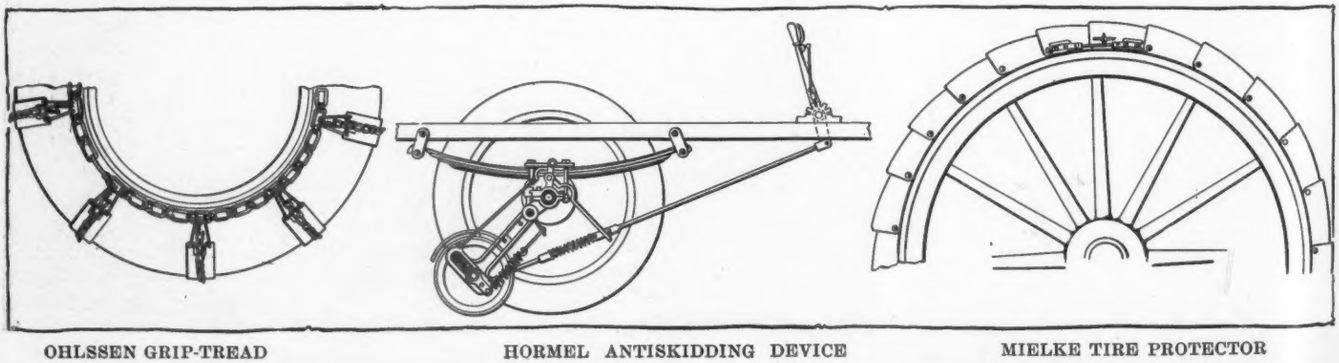
Mielke Tire Protector—No. 991,003, dated May 2; to Herman A. Mielke, Raymond, Minn.—This patent relates to a metal tire protector such as is shown herewith, which comprises a plurality of overlapping arched plates with ridges in them to prevent skidding, and means on two of the plates for connecting and adjusting the protector to the tire.

Slepica Steering Column—No. 990,915, dated May 2; to John J. Slepica, Indiana Harbor, Ind.—The advantageous features of the steering column to which this patent relates are that it may be turned upward at an angle as illustrated, so as to facilitate getting into and out of the seat. There is in connection with it an alarm mechanism. Both of these features are primarily for the purpose of preventing theft of the vehicle. The patent relates to a steering shaft or pillar for motor cars and the like, comprising a relatively fixed section, a relatively movable section hingedly connected thereto, means for locking the movable section at an angle



SLEPICA STEERING COLUMN

to the relatively fixed section, and an alarm with means for sounding it during improper manipulation of the lock.



OHLSSEN GRIP-TREAD HORMEL ANTISKIDDING DEVICE MIELKE TIRE PROTECTOR

The Motor Car Repair Shop

Hints for the Amatuer

IT IS possible for the most trivial cause of motor car trouble to turn what might have been a pleasant outing into a day of trials and hardships. It has happened that a little neglect in the beginning of a journey has been the cause of many delays, and even accidents of a more or less serious nature. Among the proverbs that are gleaned from the world's literature there are none which pertains to the motor car more emphatically than those in the category of "a stitch in time saves nine." For example, a party of motorists recently started out on a journey of 180 miles, over roads which, for the most part, were in excellent condition. After rolling along for a couple of hours and enjoying the ride to the full, the driver noticed that the car was not steering properly; it seemed that the car had developed a sudden tendency to swing its rear end to the left whenever a speed of about 20 miles an hour was attained by it.

An inspection showed that the left rear tire was entirely deflated. The pump, an extra tube and the rest of the tire-repair paraphernalia was gotten out, the car jacked up, the casing removed and the tube taken out and examined. Having run for a quarter of a mile or more before the deflated tire had been discovered, it was found that the tube was cut beyond repair. The casing then was given a thorough examination to see if the cause of the puncture might still be imbedded in the casing, and as no tacks, nails or pieces of wire were found, an extra tube was replaced and inflated. On reinflating the tire the valve was found to leak. The valve was taken from the damaged tube, but it, too, was defective, it having been the cause of the deflation of the first tube and its subsequent destruction. This valve was not as bad as the second one, however, and by pumping the tire at intervals of about every 15 minutes, a large town soon was entered, where a few new valves were obtained.

Tube a Leaky One

Having replaced the defective valve, the journey was continued, but the car had not gone more than 10 miles before the tire again required pumping. The tube was removed, another thorough search made to find the leak, but as nothing was found the third and last tube was gotten out of the car. When placing the last tube in the casing it was found that it was a 34-inch tube while the casing was a 36-inch one. Many miles from home and a leaky tire, with no prospects of getting a new tube without returning to the town 10 miles back, was not a happy prospect. The tube with its slow leak was replaced, the tire inflated and another run of 10 miles made before the pump was again brought into service. Greater speed now was attempted, with the result that many holes and bumps in the road were struck with great force; the brakes were brought into severe service every few minutes, and the general wear and tear on the car was considerably greater than it should be.

While still 50 miles from home, darkness came on. On attempting to light the headlamps, it was found that there were no hose connections between the lamps and the ends of the copper gas tubes; and even if there had been there was no carbide in the generator. The oil lamps were lit, the tire pumped and another start made. About a mile was negotiated at a very mild pace with no illumination other than that of the oil side lamps; then, they too burned dimmer and dimmer, and went out for want of oil. Another ½ mile at a snail's pace, brought the car in front of a farm house near the road where kerosene was obtained; the oil lamps were relighted, the tire repumped for what seemed to be the hundreth time, and again the car was homeward bound.

Runs Out of Gasoline

At last the lights of the suburbs of the home city were seen in the distance, half a league! half a league! and paved and illuminated streets would be encountered; when, lo a popping and spitting in the carbureter of the motor, told out in the night that the supply of gasoline was about exhausted. A spurt was made for the lights where the supply could be safely replenished; the feeble light from the lamps of the car did not show a sudden jag in the road; so that without any warning whatever, the front end of the car sprang up in the air, having mounted the curbstone, the rear end bounced up immediately afterward, a couple more hard jolts as the car crossed the sidewalk and climbed an embankment beyond and the car came to a stop pitched over at an angle that came within a few inches of permitting the car to roll over and perhaps turn turtle. Four weary motorists were impressed with three heavy facts: Never drive on a flat tire; always carry a generous equipment of extra tires; always keep your lighting equipment in condition.

Testing Connecting Rods

Fig 1 shows the means employed at the Thomas plant for testing the alignment of the connecting-rod bearings before assembling them into the motor. The rod is attached to the mandrel M1, and another mandrel M, the size of a piston pin is slipped into the upper end of the rod. A gauge G having an adjustment T, is then used to see that the distance between the mandrels M and M1 is the same on both sides of the rod. If correct the rod is pulled forward into a horizontal position so that the ends of the mandrel M rest on the surfaces S. If the ends of the mandrel M rest flat and true on the surfaces S, then one is assured that there is no twist in the rod. There are a great many repairmen who do not realize the importance of absolute alignment of the crank and piston pin bearings of a connecting rod; the rod is scraped on to the crank pin, then the piston attached and the cylinders assembled into place. If the piston binds because the bearings are slightly out of alignment, the motor will not turn over as freely as it should, but this is often thought to be due to tightness of the bearings and allowed to pass. Should one complain about the motor being stiff, the repairman would simply state that the bearings were a little stiff and that they would soon wear in and be as free as ever. The truth of the matter is that though the bearings will wear-in, as stated, the piston also would wear into the cylinder.

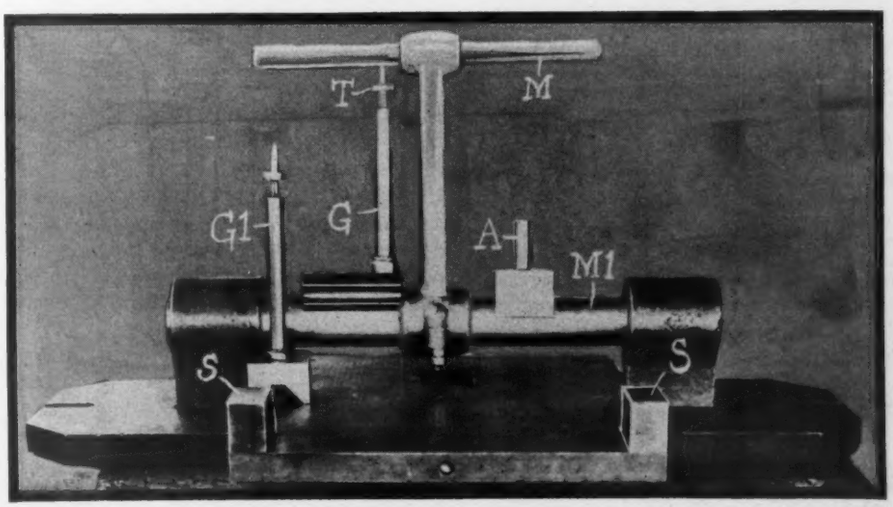
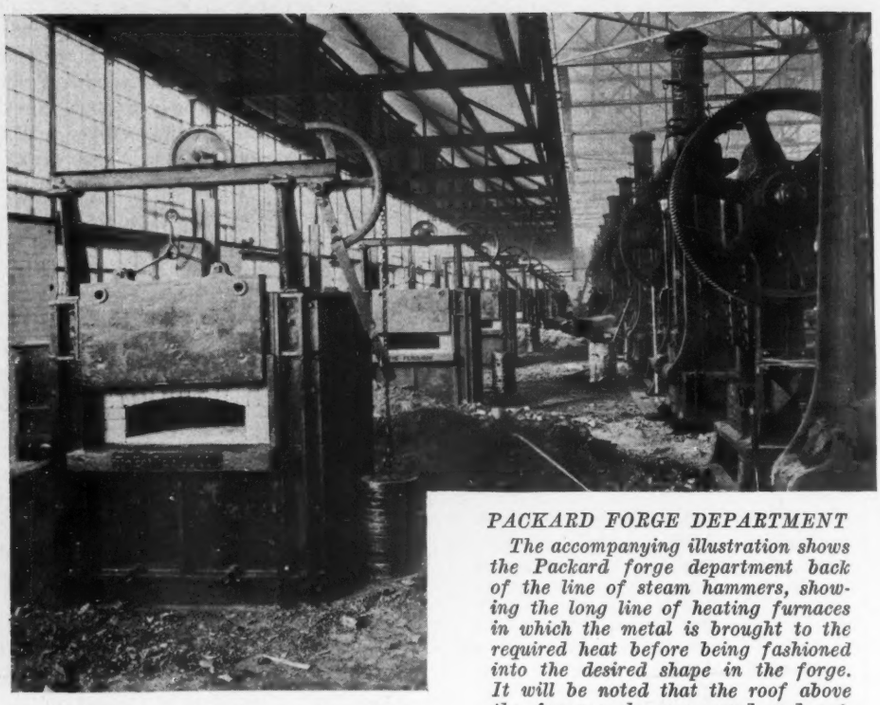


FIG. 1—THOMAS' METHOD OF TESTING ALIGNMENT OF CONNECTING-ROD BEARINGS

Among the Makers and Dealers



PACKARD FORGE DEPARTMENT

The accompanying illustration shows the Packard forge department back of the line of steam hammers, showing the long line of heating furnaces in which the metal is brought to the required heat before being fashioned into the desired shape in the forge. It will be noted that the roof above the furnace slopes upward and outward instead of upward and inward, as usual. It is sloped upward in order to conduct the smoke away from the hammers and the places where the men are working. There are smoke openings all along the outer wall where this roof joins it.

DEMAND for Aluminum—According to the figuring of B. C. Spitzley of the Abbott Motor Co., the motor industry consumes 8,000,000 pounds of aluminum per year.

Van Patten Alco Man—Leroy A. Van Patten, formerly with Alden Sampson, has been made advertising manager of the motor car department of the American Locomotive Co., a position made vacant by the death of Arthur Jervis.

Just Incorporated—The Stephenson Motor Truck Co., of Milwaukee, Wis., has been incorporated with a capital stock of $300,000. The incorporators are: A. E. Haldermann, H. F. Friedrich and Paul D. Durant. Mr. Haldermann is secretary of the Stephenson Motor Car Co., which established a plant for the manufacture of the Utility motor truck and delivery cars at South Milwaukee some time ago.

Changes at Mitchell Plant — Captain William Mitchell-Lewis, president and general manager of the Mitchell-Lewis Motor Co., Racine, Wis., announces the following changes in the personnel of the management: James W. Gilson, sales manager, to participate in the management as an officer and director; Henry Plow, assistant treasurer, to be general manager of foreign trade, with headquarters at London, Eng.; H. E. Redman promoted to assistant treasurership to succeed Mr. Plow; William H. Armstrong, assistant to the president, to be general office manager; W. L. Day to be general sales manager; Charles A. Armstrong, to be assistant general sales manager. Sales of 1911 cars show a decided increase over 1910 and the plant is working at full capacity with frequent overtime to meet the demand. The export demand never has been as great as this year and with the new arrangement for taking care of the foreign trade should show another decided increase during the coming season.

Halliday Succeeds Henshaw—Norman H. Halliday has been appointed manager of the Boston branch of the E. R. Thomas company to succeed Charles S. Henshaw, who has been promoted to have charge of the Boston branch. J. M. Quinby has also gone to New York from Boston with Mr. Henshaw, and Edwards Wells takes his place at the Boston office.

Change in Tire World—The Federal Rubber Co., of Cudahy, Wis., a suburb of Milwaukee, has been succeeded by the Federal Rubber Mfg. Co., articles of incorporation for which were filed at Madison, Wis., late last week. The company is capitalized at $1,000,000 and the following appear as incorporators: John W. McMillan, J. G. Hardgrove and Garfield S. Canright. The Federal Rubber Co., which now is succeeded by the Federal Rubber Mfg. Co., was organized about 2 years ago to take over the plant of the Milwaukee Rubber Works. The chief product since the first change is rubber tires for motor cars and trucks. It is stated that the officers of the Federal Rubber Co. will not be interested in the newly formed concern, having disposed of their interest to eastern capital. The officers are: President, John H. Frank; vice-president, William H. Upmeyer; secretary, William C. Brumder; treasurer, Mr. Upmeyer. The new company has not yet elected officers.

Ignition Merger — Negotiations have been completed for the merger of the American Electric Headlight Co., of Indianapolis, with the Remy Electric Co. at Anderson, and the Indianapolis plant will be dismantled immediately and the machinery moved to Anderson. The Remy company is arranging to increase its manufacturing facilities by the addition of several factory buildings. It is understood the Remy company will undertake to manufacture electric headlights for locomotives in connection with its magneto and motor car electric lighting business.

Opening Canadian Branches—The Thomas B. Jeffery Co., of Kenosha, Wis., is arranging for the establishment of several important selling branches in Canada, following the return of G. M. Berry, secretary, and E. S. Jordan, director of publicity, from a tour of the dominion. A branch will be established at once at Winnipeg and another at Toronto, Ottawa or Montreal. The Rambler manufacturers intend to take quick advantage of the opening of reciprocal trade with Canada and will be fully prepared to work in the new territory just as soon as the reciprocity agreement is promulgated.

Demonstration Abuses—New York dealers lately have been importuned for demonstrations running from 50 to 150 miles. While the dealers do not object to giving a reasonable demonstration, they do not feel that they should be compelled to give a demonstration of 150 miles without some assurance that they will be reimbursed for the expenses of the trip. It is believed that a short run around the city and up a demonstration hill will show the power and quietness of the motor and the easy-riding qualities of the car, as well as a long demonstration will. In order to do away with this abuse, the dealers make it a rule that upon the proposed customer demanding a long demonstration he be requested to deposit with the dealer a sufficient amount to cover the expenses of the trip. In event of the purchase this amount to be deducted from the purchase price and if the prospect does not want the machine he is to forfeit the amount of money deposited. This will mean that these long demonstrations will only be given to bonafide purchasers and

the joy-rider will be eliminated. This subject was discussed at a board of directors meeting of the Licensed Automobile Dealers of the City of New York. All of the members present were in favor of the plan and it was suggested that the entire trade be asked to co-operate.

To Help Indianapolis—W. M. Young, traffic manager of the Nordyke & Marmon Co., has been elected president of the Indianapolis Traffic Club, which is a branch of the Indianapolis Trade Association, and is seeking to improve shipping facilities out of Indianapolis. The other officers elected are: First vice-president, Henry Victor; second vice-president, Chas. Blizzard; third vice-president, W. L. Miles; historian, J. J. Landis, and secretary, H. S. Neely.

In Receivers' Hands—The Vickers Automobile Co., which has been operating a factory at Chestnut and Second streets, Coshocton, Ohio, in a small way, is in the hands of a receiver, Sheriff McDonald being appointed by Judge Devor, recently. It was shown in court that some steps were necessary to prevent the machinery being thrown into the street by the owners of the building. A chattel mortgage has been given on the machinery.

Engine Plant Growing—The Gas Traction Co., of Minneapolis, manufacturer of four-cylinder gasoline farm tractors, is erecting a $20,000 office building adjoining its factory at 2723-25-27 University avenue southeast. It will be a 40 by 80 feet, two stories, with full concrete basement, and will be of red pressed brick, with trimmings of Bedford stone. It will be ready for occupancy by July 1. The Gas Traction Co. plans to build several new buildings in the near future as the result of the company's recent purchase of the Gas Traction Co., Limited, of Winnipeg, which opens up all Canadian territory to the Minneapolis company and will necessitate increased manufacturing facilities in order to supply the increased demand.

New U. S. M. Co. Building—With the recent opening of a new sales and service building on Woodward avenue, Detroit, and the establishment of a sub-branch at Saginaw, Mich., the United States Motor Co. has added another link to its chain of distributing and service organizations now established in every city of importance in the country. This building has three large salesrooms—one for Columbia and Maxwell cars, another for Sampson freight and delivery motors, and the third for used cars. The structure has a frontage of 90 feet and a depth of 150 feet. It is constructed of terra cotta. Back of the display rooms and offices on the first floor is the service department. This is completely equipped and carries a thorough stock of parts. The Sampson factories are close at hand to supply local need of parts for trucks. The offices of Frank Briscoe, president of the Brush Runabout Co. and the Briscoe Mfg. Co.; A. I. McLeod, central supervisor of the United States Motor Co.; President O. J. Mulford, and other Gray Motor Co. officials are situated on the second floors.

Opens Cleveland Branch—The Consolidated Rubber Co., of New York, which manufactures the Kelly-Springfield tire, has opened a Cleveland branch at 1846 Euclid avenue. It is under the management of O. R. Cook.

Getting Together—Motor car dealers in St. Louis are falling into the practice of getting together once a week to dine informally. Twenty-two dealers were present at the dinner last week at one of the down-town hotel restaurants. Dutch treat rules, and after chatting for an hour or more, the diners declare that they all have been able to get helpful pointers about the trade, in addition to cementing good feeling among competitors.

Sells to British Syndicate—The Wisconsin Rubber Co., of Madison, Wis., owning a large plantation in Mexico, has announced the sale of its holdings to a British syndicate for $3,200,000, insuring its shareholders a profit of $500 per share, or 166 per cent on the investment of $1,200,000. About 8 months ago the Wisconsin company had practically concluded negotiations with a New York interest for the purchase of the holdings, but a burst in the rubber boom in the London market prevented consummation of the deal. The purchasers have transferred $50,000 to the company at Madison as earnest money and are now investigating the property, which is claimed to be one of the best producers of crude rubber in the western hemisphere.

Publicity Man Moves—The Warner Instrument Co., of Beloit, Wis., manufacturer of the Auto-Meter and other speed and mileage-recording devices, has moved its advertising headquarters back to the factory at Beloit from Boston, Mass. W. A. Merriam, who became advertising manager last fall and went to Boston when the offices were transferred to that city, has returned and will in future have his offices at the factory. After a trial of the idea of having advertising headquarters in the east, the Warner company decided to return to its former plan of having the publicity department directly connected with the factory.

Metzger Appointments—Recent appointments made by the Metzger Motor Car Co. include the naming of L. L. Barnes as district manager of southern territory, with headquarters at Atlanta; F. E. Wright as special sales representative and Joseph Gardham as inspector of finished cars.

Mais Company Appointments—Carl Wallerich has accepted the position of assistant general manager of the Mais Motor Truck Co. in Indianapolis. For some time Mr. Wallerich has been assistant sales manager of the Willys-Overland Co. at Toledo. Some years ago he was district salesman for the Overland and Marion cars and later became sales manager of the Haynes Automobile Co. at Kokomo.

Meigs Case Advertising Manager—M. C. Meigs, who 5 and 6 years ago was one of the most widely known college athletes in the middle west, but who since his graduation has been more or less swallowed up in the maw of the business world, has just been made advertising manager of the J. I. Case Threshing Machine Co., of Racine, Wis. Mr. Meigs was a member of the University of Chicago football team in 1905 when it won the conference championship.

PACKARD FORGE DEPARTMENT

A general view of the forge department in the new building specially erected for the work at the Packard plant. Along the right side of the central aisle is a row of belt-driven forges or hammers and beyond are steam hammers. The entire row on the left side of the aisle consists of steam hammers of various capacities. Back of each row of hammers is the line of heating furnaces. The cross section of the building is unique and of three different widths. The base portion is widest, being sufficiently wider than the second portion to accommodate the two rows of furnaces. The second portion is of width extending from the line of hammers at the left to that of the right. The top portion is narrowest, being approximately one-half the width of the middle one. This construction gives ample light.

Development Briefs

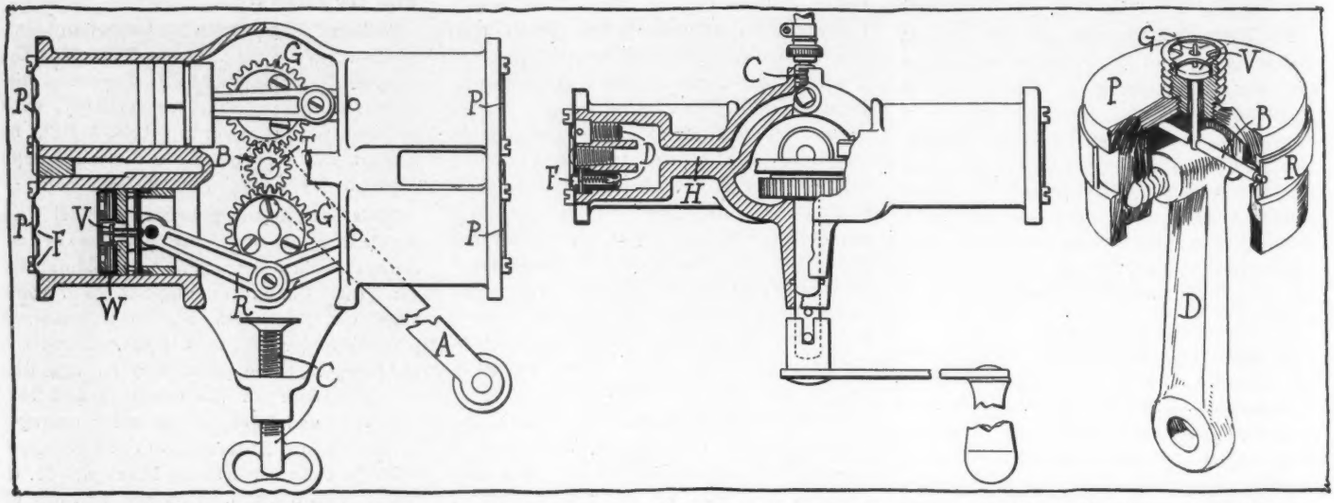


Fig. 1—Showing constructional details of the Hawthorne four-cylinder double-opposed tire pump, which is designed for attachment to the running board of the motor car while being operated. A side view partly in section is shown at the left, a top sectional view, in the center, and at the right is a piston, cut away to show valve construction.

The Hawthorne Pump

TWO of the most interesting features of the Hawthorne Mfg. Co.'s line of pumps lamps, acetylene gas generators for motor cars, motorcycles and windshields are its four-cylinder hand pump for motor car tires and its new headlamp. The four-cylinder hand pump, as illustrated in Fig. 1, has its cylinders arranged in opposite pairs and all four are made in a single gray iron casting, with separate head plates P. A powerful screw clamp C is formed integral with the cylinder casting, by which means it can be readily screwed to the running board of a car. The pump is operated by means of a crank handle A, which is detachably secured to the shaft T to which is keyed a spur pinion B. This pinion meshes with a pair of gear wheels G, having twice the number of teeth of the intermediate pinion, so the crank motion is geared down in the ratio of 2 to 1.

Each of the driving-gear wheels G is screwed to a crankshaft and from the crankpins connecting rods R communicate with the pistons of opposite cylinders. The two crankpins are arranged at right angles to each other, so that when one pair of pistons is at the end of the stroke the other pair is approximately at midstroke. The gears are cut from steel disks, connecting rods are of manganese bronze and the pistons are of cast iron.

In operation air is admitted to the cylinders through automatic intake valves V in the center of each piston head. These inlet valves are mechanically actuated by piston rings, communicating with the valve, as illustrated in Fig. 1. The rings drag slightly against the walls of the cylinders, so that as the pistons move away from the cylinder heads the valves are opened and as they move toward the cylinder heads the valves are held tightly shut. Each piston is supplied with a very heavy leather washer W, which, though claimed to last indefinitely, can, if necessary, be supplied by the Hawthorne company at 5 cents each.

During the compression stroke the air is forced from the cylinders through the discharge passages F formed in the pressed steel cylinder heads and through the discharge valve G into a common cored passage H leading from each pair of cylinder heads to the main air outlet connection C. The bore of the cylinders is 1¾ inches and the stroke 2 inches, which is equal to an 8-inch single stroke and with the equal arrangement of the strokes in a revolution the gear ratio and the long crank handle operation of the pump is most easy.

As for the headlamp, its most notable features are the simplicity of its design, the adjustable focus and its removable reflector which is so designed as not to be affected by ordinary heat conditions. The casing or body of the lamp is made from a single piece of brass and is blanked or cut and formed at a single operation. Thus strength and economy of manufacture are

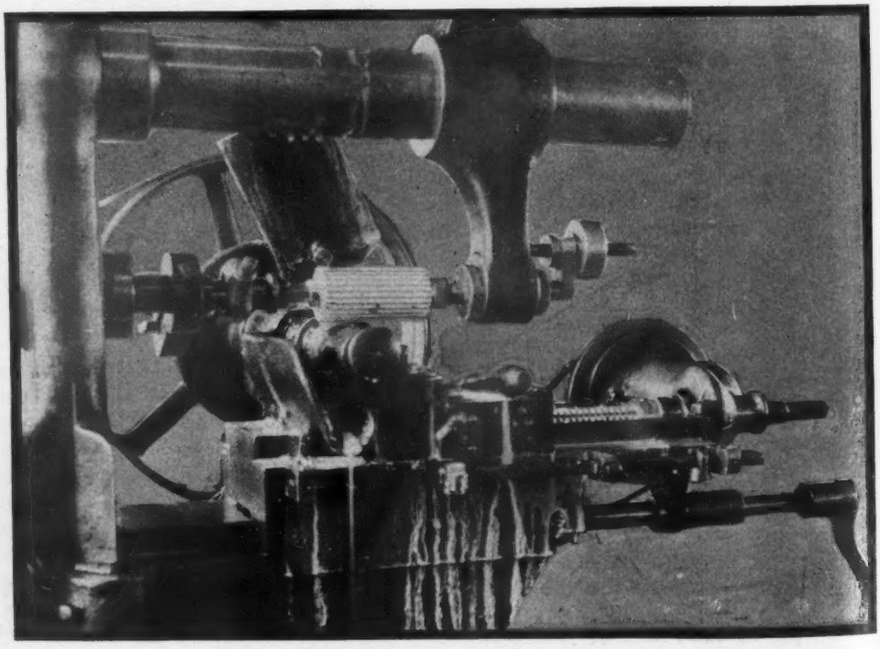


Fig. 2—A milling machine in the Hawthorne plant in which a dozen or more of the spur gears for the pumps are cut simultaneously

obtained. As illustrated in Fig. 6, the lens mirror M at the back of the lamp is mounted in a silvered brass holder and screwed onto a threaded support mounted centrally in the back of lamp. This permits of easy removal of the mirror for cleaning or repairs. By loosening the nut N and holding the nut T, the burner may be shifted as indicated by the dotted lines, thus the focus may be adjusted as desired.

New Ball Bearing Grease

A new lubricating grease, compounded expressly for use with anti-friction bearings, has just been put on the market by the Hess-Bright Mfg. Co., under the name of Hess-Bright bearing grease. Many greases which give satisfactory results with plain bearings are very detrimental to anti-friction bearings. This is due either to the presence of free acid or alkali in the grease, which corrodes the polished surfaces of balls and races, or to the presence of fillers in the grease, such as talc, mica, coarse graphite, sawdust, etc. Some of these fillers are used for their lubricating qualities, others to deaden the sound of transmission gears. Their usefulness in plain bearings is frequently questionable, and in ball or roller bearings they are very injurious, as the balls or rollers are forced to roll over and crush the solid particles. Coarse particles cause an actual wedging action, which may even go so far as to split a race or sleeve, or at least do considerable damage.

After an investigation by tests and analysis of all the leading greases on the market, the Hess-Bright company has found that to obtain a suitable grease for its ball bearings extreme care, both in the selection of pure and fresh materials and in their accurate compounding, was required; therefore, arrangements have been made with one of the leading makers of industrial greases to supply this company with a grease specially made-up to meet its requirements. This has been put on the market at the price of other good greases for the special benefit of users of Hess-Bright ball bearings.

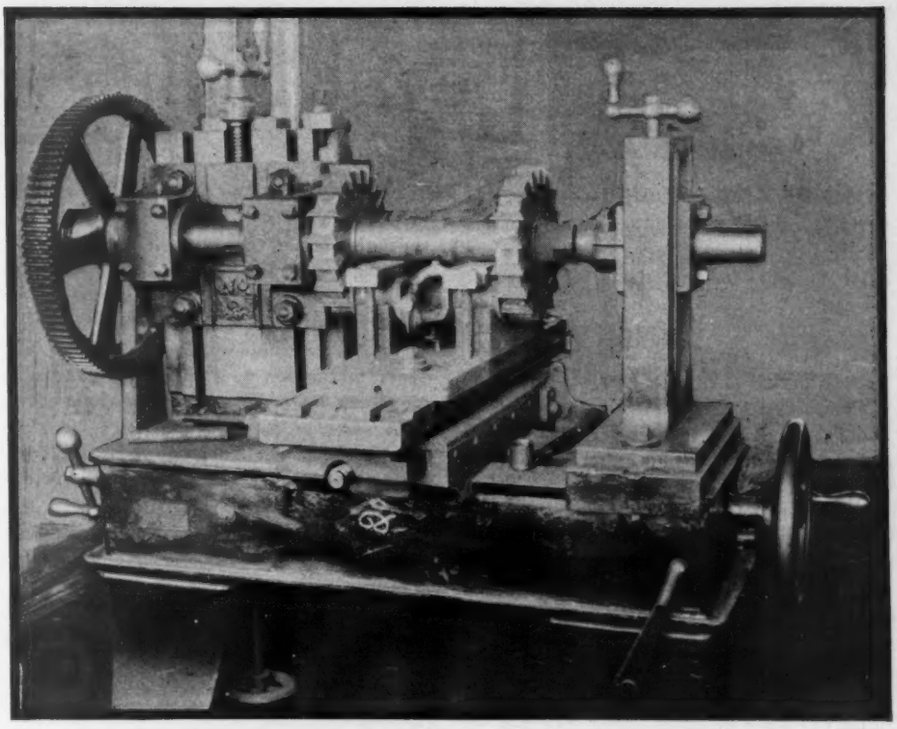


Fig. 3—Another type of milling machine used in making the Hawthorne pump

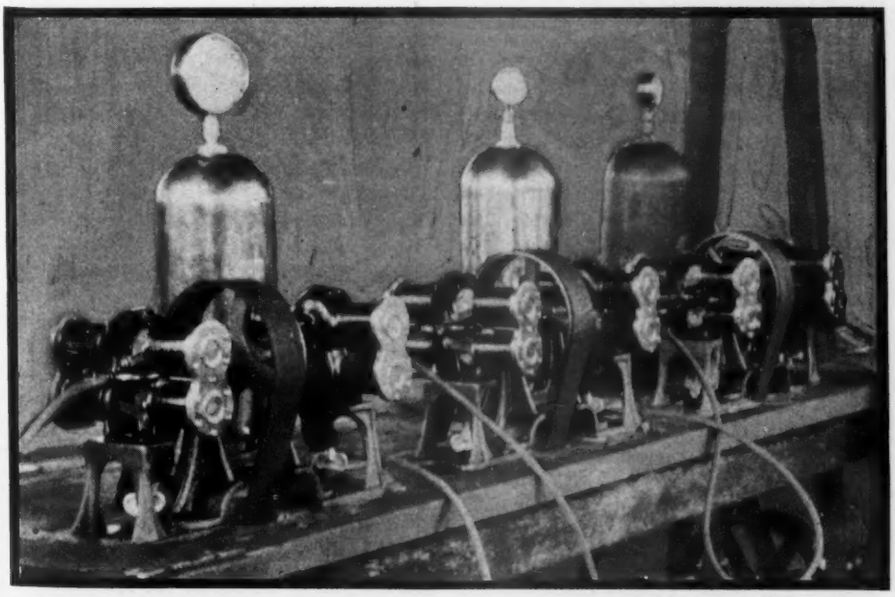


Fig. 4—A section of the testing bench showing how the Hawthorne pumps are tested.

Fig. 5—An illustration of the brass-working process known as spinning

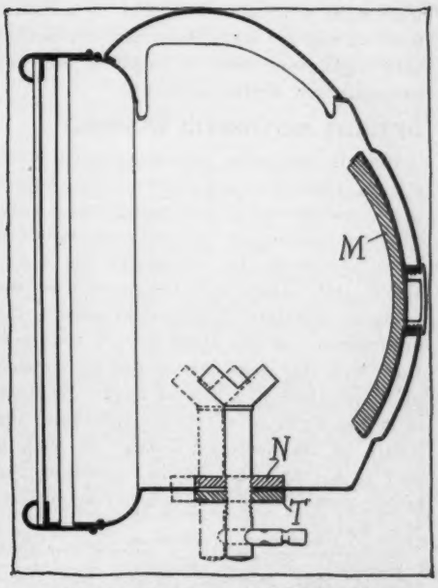


Fig. 6—Hawthorne Old Sol head-lamp,

Legal Lights and Side Lights

WISCONSIN MAY CHANGE

THE committee on judiciary of the Wisconsin assembly has reported for passage the amended motor car bill, which is a composition of a dozen bills relating to the maintenance and operation of motor cars. The amended bill changes the registration and licensing system by providing for an annual fee of $2. At present an owner is required to pay $2 for a license and number plate, which is good until the car passes out of his hands. Motorists will accept the change, realizing that the existing system is too lenient and the price below that of most other states. The bill also increases the speed limit in cities from 12 to 14 miles per hour, but retains the present limit of 25 miles per hour in the country. The bill, however, does not propose to allow the full latitude of 14 miles per hour in cities under any and all circumstances and provides for arrest for recklessness under the circumstances, such as passing through crowded streets.

The assembly committee on highways also reported for passage the Donald good roads bill, but with several important changes from the original bill as passed by the senate. The amended bill proposes to remove the influence of the state university, which has been a great factor in the development of good highways, by changing the manner of administering the annual fund for the purpose. The amended bill provides for a commission, none of the members of which shall be state officers, to be appointed by the governor. This would eliminate the dean of the college of agriculture of the University of Wisconsin. The powers of the commission are considerably broadened under the assembly changes. There is a prospect of a long fight over this bill, and as adjournment is not far away there are fears that this legislature will do nothing for the promotion of better highways.

DETROIT MOTORISTS WORRIED

Detroit motorists continue to be much stirred over the legislation now before the common council governing motor cars. The ordinance now has been so amended as to throw all the city inside the 4-mile circle, into what will be considered the business district. This would permit the enforcement of the state law in that portion, and the state law prohibits a speed of faster than 10 miles an hour. Whether it is the right of a city to determine the limits of its business district in such a way is not known. Beyond question, the larger part of this area is occupied by private homes.

Motorists are making a determined fight against this measure, which has been amended several times but has not yet passed the council. As it stands at present, the proposed ordinance prohibits a speed of faster than 10 miles an hour inside the 4-mile circle, makes all motor cars come to a dead stop before crossing a car track, rigidly prohibits passing a street car to the left, and makes it necessary for every motor car to stop before passing a street car which is discharging passengers. That some of these radical items may be eliminated is the hope of Detroit motordom. It is recognized, however, that the prevalence of reckless driving and the large number of accidents this spring make it necessary for the council to provide the police department with an ordinance which can be enforced by some definite means. The present traffic law is admitted too difficult on account of several provisions in which judgment to a considerable degree of latitude is permitted.

OHIO ROAD BILLS PASS

The Maguire and Hudson bills providing for an annual expenditure of probably $6,000,000 for carrying out a system of highway improvement in Ohio were passed by the legislature last week and have been sent to Governor Harmon for signature. The Maguire bill creates a state highway improvement department and the Hudson bill provides for an annual state tax levy of ½ mill to carry out its purposes. It is estimated that under this measure it will take only 7 years to complete a splendid system of roads connecting every county seat and trade center in the state. The ½ mill levy will raise about $3,000,000, to be distributed equally among the counties of the state, which under the law are required to raise a like amount for road purposes.

The state commission will designate the roads to be improved, the work to be carried as far each year as the annual appropriation will allow. County commissioners select the material to be used, and if they fail to carry on the work the state commissioner has authority to do so. Half the expense will be met by the state, a quarter by the county, 15 per cent by the township, and 10 per cent by abutting property owners. The measure provides for a state commissioner at a salary of $4,000 a year, three deputies at $3,000 each, eight division engineers at $2,000 each, and a number of clerks.

The department is divided into bureaus of improvement, maintenance and bridges. The measure was opposed by counties containing large cities for the reason that they will be compelled to pay a large per cent of the tax and will get but one eighty-eighth each of the fines in return. Lucas county, in which Toledo is located, will under this law pay annually $125,000 into the fund and will receive but $34,000 out of it. It is hoped that this law will bring about the general use of more modern methods of road building.

NO POWER TO PURCHASE CAR

The fiscal court of Jefferson county, Kentucky, to which court is confided the exercise of the corporate powers of the county, appropriated money for the purchase of a motor car for the use of members of the court in inspecting various county roads which were from time to time being built and improved.

A suit was brought to test the right of the court under the Kentucky statute conferring powers on the court to make such an appropriation. The statute in question among other things provided for the hiring of wagons, plows, scrapers and teams, and for the hiring or buying of necessary tools or implements for doing the work.

It was contended that this statute conferred power to purchase and maintain a motor car. The court on appeal held, in the case of Hollis vs. Weissinger, 134 S. W. Ky., 176, otherwise, saying in part: "We do not find . . . any authority given the fiscal court to purchase a wagon or other vehicle to be used in maintaining the public roads of the county; it may hire, but cannot purchase, a wagon or other vehicle for such purpose, and, if no power exists in the fiscal court to purchase a wagon or other vehicle for use in keeping in good condition the public roads of the county, upon what theory can it logically be claimed that it may purchase a motor car for the use of members or committees of the fiscal court to travel over the country to inspect its roads or supervise work thereon?"

THE RIGHTS OF A BEGGAR DEFINED

"The beggar on his crutches has the same right to the use of the streets of the city as has the man in his motor car. Each is bound to the exercise of ordinary care for his own safety and the prevention of injury to others in the use thereof. There is no presumption of negligence from the fact that the driver of a motor car ran against a beggar on the street.

"In an action for damages by being run into by a motor car, an instruction that the burden of proof is on the plaintiff to show by a preponderance of the evidence that he was injured by the negligence of the defendant, and, unless plaintiff has shown by a preponderance of the evidence that the defendant omitted some duty he owed the plaintiff, the defendant was not liable, held proper." This was the decision in the case of Millsaps vs. Brogdon, 134 S. W. Ark., 632.

Brief Business Announcements

CLINTON, IA.—The Finch Auto Co. has bought the business of W. H. Poston.

St. Louis, Mo.—The M. M. Baker Co., 2007 Locust street, is now agent for the Abbott-Detroit.

Boston, Mass.—The Alfred Cutler Morse Co. has taken the Boston agency for the Metallurgique car.

Boston, Mass.—The Colby car has been added to Boston's motor colony, and H. A. Harris is handling it.

Columbus, O.—The Columbia branch in Columbus has just moved into a new building, where every facility of exhibition and service to owners is provided.

New York—The Cross & Brown Co. has leased for the Thomas Motor Cab Co., of Buffalo, the building at 640 to 648 West Twenty-eighth street to the Fiat Automobile Co.

New York—George S. Waite, formerly sales manager for the Amplex factory, has undertaken the general supervision of the sales department of S. J. Wise & Co., eastern distributors for the Amplex.

Pittsburg, Pa.—R. L. House has resigned his position with the Pittsburg branch of the F. B. Stearns Co. and will hereafter represent the Cleveland Speed Indicator Co. in Allegheny county. His offices will be in the Highland building, East End.

Syracuse, N. Y.—One of the first garages in central New York devoted exclusively to the uses of motor trucks is now being built in West Jefferson street, this city, by the Chase Motor Truck Co., of Syracuse.

Victoria, Tex.—Jake Appel is forming plans for a corrugated iron building to be erected on Bridge street which, when finished, will be occupied by Fred Evertson, local agent for the Buick, as a garage and salesroom.

Lowell, Mass. — Arthur G. Beharrell, Lowell agent for the Velie, has opened the largest garage in this city. It is built of concrete, with a capacity of sixty cars. The first floor will be devoted to a salesroom for Velie cars and an office.

Boston, Mass.—The Coburn Auto Sales Co. has leased the Regent circle garage, which has just been erected near the Brookline-Boston line, and it will conduct a repair and garage depot there for the Enger cars and Johnson cars and trucks.

Indianapolis, Ind. — New agents appointed to handle the Cole have been appointed as follows: R. E. Harris, Kenton, O.; L. J. Porter, Thomson, Ga.; A. C. Porter, Marshall, Minn.; William Petry, Hudson, N. Y.; M. J. Nelson, Hillsboro, N. D.; Parker Auto and Supply Co., Parker, S. D.; William McLeod, Winfred, S. D.

St. Louis, Mo.—The Albert Sterne Motor Car Co., 4127 Olive street, is agent for the Krit car.

Cleveland, O.—The Anchor Motor Car Co. has increased its capital stock from $50,000 to $100,000.

St. Louis, Mo.—The Philadelphia Storage Battery Co. is represented in St. Louis at 2219 Lucas avenue by T. B. Entz.

Newark, N. J.—Richard Newton, who has for the last 5 years been identified with the Stoddard Motor Co. as manager of the Newark branch, announces he has severed connections with that concern to re-enter the dealers' ranks upon his own behalf, taking the agency for the Everitt for the northern part of New Jersey.

Baltimore, Md.—Gladfelter & Chambers have been awarded the contract to build a stone and brick garage for the Lambert Auto Co. at the southwest corner of Maryland and Mount Royal avenues. Plans have been completed by Edward L. Palmer. It will measure 55 by 110 feet. The cost for construction will be $25,000.

Schenectady, N. Y.—The Schenectady Illuminating Co. has determined to build a garage for taking care of electric trucks and pleasure vehicles. To this end the company has taken the agency for the delivery wagons manufactured by the General Vehicle Co., of Long Island City, manufacturers of electric and commercial vehicles. These vehicles will be sold to merchants at a nominal cost, and the company will take complete care of the trucks or delivery wagons, keeping them in proper repair, renewing batteries and keeping them properly charged.

Hartford, Conn.—H. B. Hawkins, who has been in the diamond business for several years, has taken the local agency of the Correja.

Hartford, Conn.—Skinner Brothers, local agents for the Stearns car, have opened a store at 172 Allyn street. Heretofore they have occupied office room in the Connecticut Mutual building.

Prescott, Ariz.—W. E. Rhodes and Charles H. Howard have formed a copartnership in the garage business in this city and will occupy quarters on Cortez street, where the former has been located.

Omaha, Neb.—The Moran Denny Auto Supply Co. recently moved into its new garage at 842 Baronne street. T. J. Moran has returned from a trip to Detroit, where he made arrangements to handle the Abbott-Detroit.

Washington, Pa.—The Central Auto Co. is a new concern which has just located at 177 South Main street in this city. Its incorporators are D. P. Hart and W. A. Watson and it will handle the Moon car for a starter.

Sacramento, Cal.—The Graham-Williams-Murdock Co., agent for the Amplex, Everitt and Baker, has moved into permanent quarters at 1215-1217 Seventh street. The new garage is constructed on the mission style of architecture.

Cleveland, O.—P. D. Beach, who for the past 10 years has been traveling Ohio, Indiana and Kentucky for the Consolidated Rubber Tire Co., has been appointed assistant manager of the Cleveland branch, located at 1846 Euclid avenue.

Bristol, Conn.—Frederick Hughes, for the past 6 years chief engineer for the Driggs-Seabury Ordnance Corporation, of Sharon, Pa., has joined the engineering staff of the New Departure Mfg. Co., of Bristol, Conn., manufacturer of ball bearings.

Boston, Mass.—The Ohio car is represented in Boston again this time by the Kimball brothers, a firm that has been in the carriage trade nearly a century. It will be handled temporarily from the firm's salesroom on Sudbury street. John A. and S. A. Stewart now comprise the firm.

Newark, N. J.—The Newark Automobile Mfg. Co., recently incorporated, has completed negotiations for the purchase of a site for its proposed factory on the Lehigh Valley railroad near Clinton avenue and Twentieth street. By June 1 the company hopes to have its own manufacturing plant in operation and be prepared to build motor trucks up to a 10-ton capacity.

Recent Incorporations

New York—Motor Finance Co., capital stock $100,000; to manufacture and deal in accessories, motor vehicles, etc.; incorporators: H. S. J. Flynn, S. Friedlander and T. E. Flynn.

Rochester, N. Y.—Rochester Motor Fire Pump Co., capital stock $150,000; to manufacture motors, [illegible] apparatus etc.; incorporators: R. S. McMahon, L. Fuchs and J. T. McGovern.

Jersey City, N. J.—Olympia Mfg. and Service Co., capital stock $100,000; to manufacture motor cars; incorporators: R. Segelken, H. Schmidt and R. Segelken, Jr.

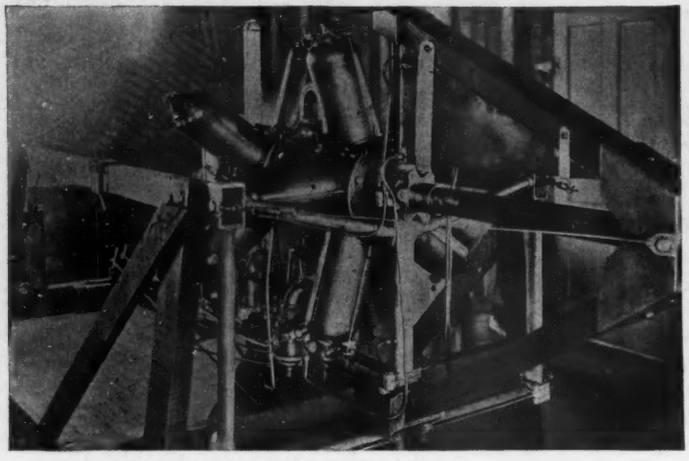
Newark, N. J.—Beaver Engineering Co., capital stock $100,000; to manufacture electric motors, dynamos, electrical machinery, etc.; incorporators: C. M. Myers, A. L. Myers and M. G. Hammerschlag.

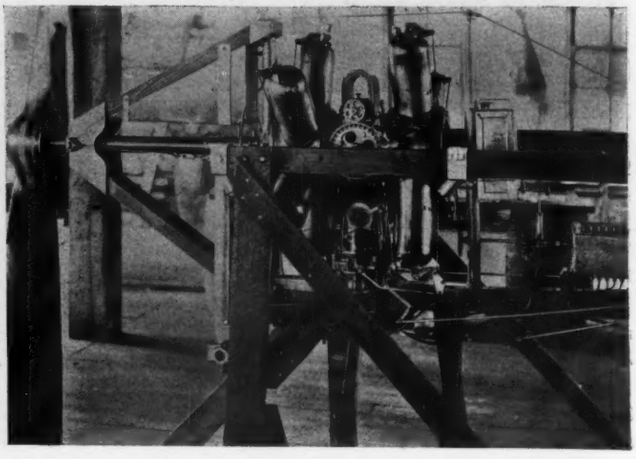
East Orange, N. J.—L. E. Schlotterback Mfg. Co., capital stock $500,000; to construct vehicles and flying machines; incorporators: L. E. Schlotterback, C. F. Landmesser and W. A. Wachenfeld.

Boston, Mass.—Otto Motor Co., capital stock $150,000; incorporators: R. O. Hood, J. P. Lawrence and E. S. Harris.

Chicago—F. W. Patterson, capital stock $2,500; to deal in motor cars and accessories; incorporators: H. Clary Calhoun, Fred A. Rathje and F. W. Patterson.

New Ideas Found in the Brooke Motor





FIGS. 1 AND 2—TWO VIEWS OF THE BROOKE TEN-CYLINDER REVOLVING NON-GYROSCOPIC GASOLINE MOTOR

IN ORDER to neutralize the gyroscopic action of the flywheel or torque maintaining members existing in the conventional type of internal combustion motor. Thomas Preston Brooke, well known in many parts of the country as the former leader of the Chicago marine band, has designed and built the motor illustrated.

It is practically two motors of the five-cylinder, four-cycle revolving type, which are arranged side by side on the same shaft and connected by gears so as to turn in opposite directions. The cylinders are of steel, have a bore and stroke of 4¼ inches, and are air-cooled and mounted in pressed steel crankcases. The intake valves are mounted in the heads of the pressed steel pistons and automatically operated; the passing of the fuel through the piston heads also is a factor in the cooling system; mechanically-operated exhaust valves are arranged in the cylinder heads, and holes are drilled in the sides of the cylinders which permit much of the exhaust gases to escape from the cylinders as the pistons near the end of their strokes. This also facilitates cooling the cylinders. Two carbureters are fitted, one for each set of cylinders. A Bosch high-tension magneto, such as is used on a two-cylinder motor cycle, is the sole source of ignition current. Lubrication of the motor bearings is maintained by a mechanical force feed oiler, and the internal mechanisms of the motor, such as the pistons and valve-operating devices, are lubricated by oil contained in the fuel mixture.

Among the advantages claimed for this construction are: Simplicity of construction, accessibility to all of its features and the ease with which it may be dismantled; it partially or wholly eliminates the gyroscopic forces; either set of cylinders can be run separately permitting one set to cool or rest, or both can be used simultaneously; and, owing to the use of steel stampings for many parts, the motor is exceptionally light, parts are interchangeable, and the production in quantities can be very economical.

The arrangement of the bevel gears is very simple, two beveled pinions or rings R are secured to the adjacent sides of the motor crankcases, and in mesh with them are two oppositely disposed pinions P, loosely mounted on stub-shafts S which protrude horizontally from the central support T of the stationary crankshaft. The revolving sections have an exceptionally long bearing on the crankshaft, which should be conducive to long life and heavy duty. Pull-rods D which operate the exhaust valves in the cylinder heads are themselves operated by rocker-arms A, actuated by cams C. The cams C are protrusions from the floating cam-ring CR which, having gear teeth on its internal edge, is driven at the required speed through means of a set of spur gears communicating with the gear G on the crankshaft. Shown at the left in Fig. 3.

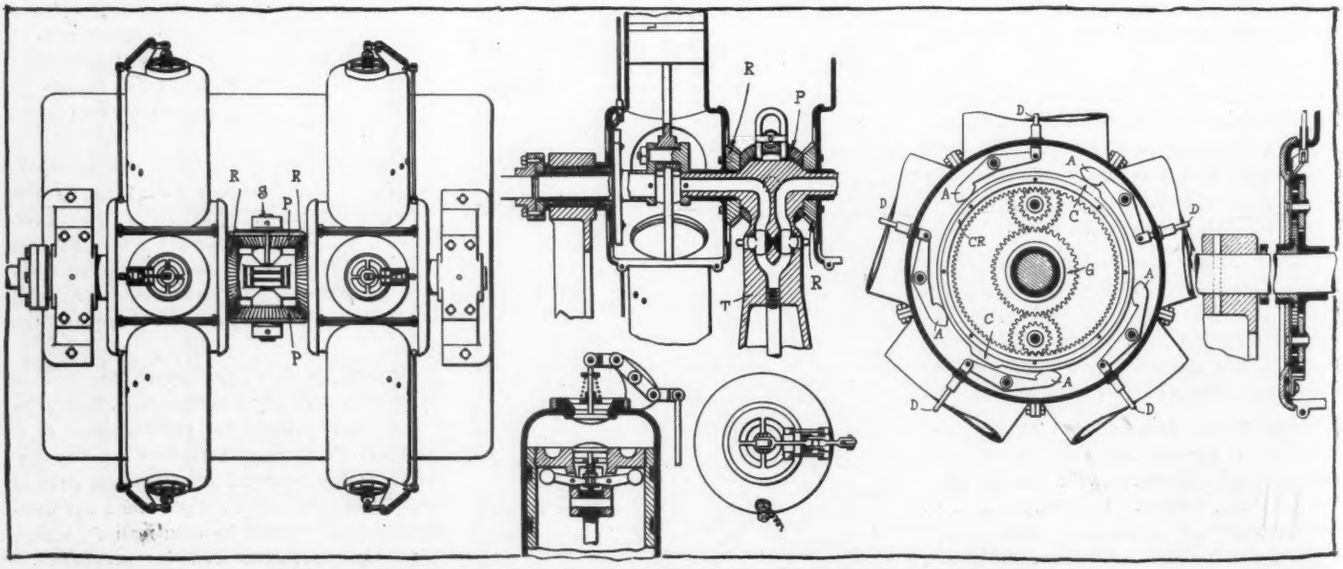


FIG. 3—SHOWING DETAILS OF BROOKE MOTOR CONSTRUCTION AND DESIGN